Report of a General Preservation Assessment

Town of Hingham

Town Clerk
Historical Commission
School Department
Public Library
Historical Society

February 2-5, 2009

Submitted May 21, 2009 by:

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EXECUTIVE SUMMARY

Paper-based historical records in the Town of Hingham were assessed for preservation planning purposes by Angelina Altobellis, Assessment Program Coordinator of the Northeast Document Conservation Center (NEDCC) in Andover, MA from February 2-5, 2009. The assessment was funded by Hingham's Community Preservation Act. Focusing on Town Clerk and Historical Commission records, as well as the records of the School Department, Public Library Historical Collection, and the Historical Society Archives, it evaluated the building and environment as they relate to the preservation needs of the records; examined current policies, storage and handling procedures; and assessed the general condition of records. Invaluable information was provided by Eileen McCracken, Town Clerk; Alexander Macmillan, Chair, Hingham Historical Commission; Andrea Young, Administrator, Hingham Historical Commission; Jeff Pizzi, Town Hall Maintenance Supervisor; Dennis Corcoran, Director, Hingham Public Library; Juliana Holbrook, Head of Technical Services, Hingham Public Library; and Suzanne Buchanan, Executive Director, Hingham Historical Society.

Recommendations for short, medium, and long-term priorities are as follows:

Short-term Priorities (problems requiring immediate action and/or projects that can be undertaken with existing resources)

- **The Town Clerk should prepare a written collection management policy for the records under her care.** A local collection management policy will establish practices and will help ensure that they are implemented consistently over time. Prepare one document containing policies and procedures for preservation, including handling guidelines, maintaining security, storage methods, environmental monitoring and targets, preservation-quality microfilming, library binding, and maintaining records of any conservation treatments performed on Town records. For more information, see "Collections Policies and Preservation," preservation leaflet 1.5 in *PLAM3*, or online at www.nedcc.org.

    - **The Town Clerk's policies should extend to the Historical Commission and School Department records.** It was not clear who would assume responsibility for preservation of and access to these materials; this will need to be determined.

- **The Public Library should expand its collection management policy for the Historical Collection.** A comprehensive collection management policy is essential to the success of preventive conservation efforts. Such a document will serve the purpose of capturing and consolidating broad institutional knowledge, and will ensure that established practices are implemented consistently over time. Specifically, more detailed policies and procedures are needed for accessioning, maintaining security, and proper handling. The overall policy needs to be augmented to cover deaccessioning, as well as preservation, including environmental monitoring and environmental targets; selection of archival housing supplies; preservation-quality exhibition; loans; library binding; preservation-quality microfilming; and maintaining records of any conservation treatments performed.

- **The Historical Society should expand the collection management policy for its archives to include policies and procedures for preservation, as recommended above for the Public Library.**

- **The Town should add a line item to its budget to carry out preservation activities recommended in this report.** In the short- and medium-term, funding is needed to purchase archival supplies and to fund preservation training. Funding may also be needed for additional staffing, and in the long term, it will be needed for expanded records storage space and additional storage furniture.

- **The Public Library should establish a budget line for purchasing preservation supplies (i.e., archival folders and boxes).** Even if only a small amount can be budgeted, it will demonstrate to granting agencies the Library's commitment to preservation.

- **Each organization will need to allocate staff time for carrying out ongoing preservation activities as recommended in this report.** These will include activities such as environmental monitoring and disaster planning, which will not require extensive amounts of time but will nevertheless need to be integrated into existing job descriptions. Note that time will also need to be allocated for one-time actions, such as rehousing of materials.

- **The Historical Society should continue to catalog its collections and add records to its Past Perfect database.**

- **Written maintenance schedules should be developed for each building.** A written schedule that outlines what will be done from month to month will help staff keep track of maintenance activities. It will also help ensure that maintenance and inspections remain consistent over time, and in the event of staff changes.

- **A log of building maintenance and problems should be kept for the Town Hall and School Department.** Preserving information about the building and systems will be extremely useful in the long term because it will provide a context for understanding any problems that may arise. It will also support informed decision-making for future repair or construction projects.

- **The Public Library should contact a vendor specializing in mold remediation to identify the cause of the mold problem, evaluate its extent, and to perform necessary clean-up.** Munters, a company that provides such a service, offers on-site consultations free of charge, and can provide an estimate. They can be contacted at (978) 388-4900. Although the mold can be removed, it is important to understand that mold problems will be recurring until the leaks and moisture seepage potentially triggering mold germination are repaired.

- **Instruct staff and volunteers working with historical collections to put materials away when they are through working with them each day.** Left in the open, they are vulnerable to damage from light and water, and will accumulate dust and dirt, which can cause soiling and abrasion.

- **The Public Library should arrange the materials in Historical II so that only materials in boxes or closed cabinets are located in the vicinity of the security light.** To curb light damage, books and any other unenclosed materials should be placed as far away from the security light as possible.

- **Avoid storing materials directly on the floor.** If shelf space is unavailable for them, use an alternate means of elevating boxes and books at least four inches off the floor. One option would be wooden or plastic palettes.

- **Public Library staff should continue to monitor water leaks.** It is commendable that they have been so attentive in monitoring this problem.

- **The Town Clerk and the Historical Commission should be given keys to the attic rooms where their records are stored.** It is unusual for individuals directly responsible for records preservation not to have first-hand access to those records. Moreover, impeded access to records promises to slow response time in the event of a disaster.

- **At least one other person—ideally, the Town Clerk—should hold keys to the two basement vaults in the Public Library.** An extra set of keys could be useful in the event of a disaster, allowing for faster response time if the Administrative Assistant were unavailable or if, for some reason, her keys could not be found.

- **Avoid storing miscellaneous materials (e.g., tax forms) in rooms where historical records are stored or used.** Miscellaneous items can accumulate over time to produce clutter, which compromises security (by obscuring surfaces and lines of sight to work tables). Clutter can also become a haven for pests, dirt and dust.

- **Each organization should establish written use policies.** For suggested policies, see, "Collections Security: Planning and Prevention for Libraries and Archives," preservation leaflet 3.12 in *PLAM3*, or online at www.nedcc.org.

- **Each organization should establish a means of registering researchers.** Researcher registration forms are the most common registration method in libraries and archives, but the Town Clerk's office may find it simpler to ask researchers to sign a log book. Every researcher should be required to register and to submit a photo ID to confirm their identity. For a sample registration form, see "Collections Security: Planning and Prevention for Libraries and Archives."

- **Using sticky traps, each organization should begin monitoring all records storage areas for any signs of insect infestation.** These will help determine the extent of any problem that does arise. Knowing which pests are entering the records storage areas will help the staff to determine effective preventive strategies. See "Integrated Pest Management," leaflet 3.11 in *PLAM3* for more information.

- **The presence of silverfish often indicates elevated humidity levels.** Lowering the relative humidity in the Library to a level below 50% will create a less inviting environment for these insects.

- **The Historical Society should replace the shelving unit holding photographic materials as soon as possible.** As noted in Section III.A of the report, this unit is unstable, and if it tipped over, the materials stored on it—which include glass-plate negatives—could be damaged. In addition, its shelves are too narrow to fully support the boxes stored on them.

- **Each organization should prepare a list of guidelines for proper handling of records.** Incorporate these guidelines into the collection management policy to help ensure that they remain in place over time. The guidelines should be distributed to all departments that manage public records, and all employees that handle these materials should be familiar with them.

- **Improve stacks maintenance.** Proper shelving is one of the best and least-expensive means of extending the useful life of collections. Ensure that non-oversize volumes are shelved upright and not leaning, using non-knifing bookends for support. Any oversize volumes shelved on their fore edge should be turned onto their spine if they cannot be shelved flat. Ongoing shelf maintenance will ensure that books retain their shape.

- **Remove metal fasteners from volumes in the Public Library (Historical II).** They are causing indentations, and could cause tearing.

- **To the extent that drawer space allows, the Public Library should transfer oversize items not already in boxes or drawers to flat file drawers.**

- **Compile an inventory of all microfilmed records, and in doing so, determine and record the location of master negatives.**

Medium-term Priorities (projects that will require planning and organization or additional resources and staff time)

- **When possible, the Town might consider making funds available to hire an archivist/records manager to assist the Town Clerk (and other Town departments) with records management and preservation.** The Town of Burlington has taken this route; a complete job description for that position is available online at http://www.burlington.org/clerk/archives/Job.htm. The person hired for this job should have formal archival training.

- **Seek grant funding for preservation.** Recommendations for specific grants are listed in Section I.B of the report.

- **Prepare a complete inventory of the collections in the Town Clerk's office, School Department, Historical Commission, Public Library, and Historical Society.** Intellectual control is integral not only to access, but also to the security of the materials.

- **Evaluate Town records for retention and disposition.** Disposal of inactive records will likely free up at least some storage space, and once it is known which records are permanent, the Town can begin to establish more specific preservation priorities.

- **Environmental monitoring should be carried out in the Town Hall records storage spaces, and in Historical II at the Public Library.** Data loggers, which automate data collection, would be the most time-efficient devices. Ongoing environmental monitoring will help determine the effectiveness of HVAC systems, and will help to make the case for necessary adjustments. In the Town Hall attic, environmental monitoring data collected over two changes of season will provide an accurate picture of climate levels and fluctuations. This information might support efforts to extend climate control to the attic, or to find a more suitable storage space for the records stored there. For more information on environmental monitoring and devices, see NEDCC preservation leaflet 2.2, "Monitoring Temperature and Relative Humidity," in *PLAM3* or online at www.nedcc.org.

- **Keep temperature and relative humidity levels as stable as possible in all spaces housing historical records.** This is one of the most important actions Hingham can take to increase the longevity of

these materials. Maintaining appropriate and consistent levels will entail different steps in each building:

- **In the Town Hall, School Department, and Public Library, the HVAC system should be set at one level that is maintained 24 hours a day, 7 days a week.** The temperature should remain at or below 70°F, with daily fluctuations not surpassing ±2°F.

    - **Use portable dehumidifiers to keep humidity below 50%.** Elevated levels of relative humidity can prompt mold growth, which can become a significant problem in very little time. And as the Library has seen, high humidity can also attract certain types of insects. Environmental monitoring data will help staff determine when dehumidification is needed.

    - **Explore options for stabilizing temperature and relative humidity in the Town Hall attic, and bringing it to appropriate levels.** The Town might consider working with an environmental engineer specializing in cultural heritage institutions. If temperature and humidity in the attic cannot be stabilized at appropriate levels, the records stored there will need to be moved to a space with year-round climate control.

- **At the Historical Society, use window air-conditioning units to control summertime temperature and humidity in the archives storage room.** A temperature at or below 70°F would be acceptable, but in the long term, aiming to keep the temperature at or below 65°F would be even better, because the collections contain photographic materials, which require a cooler storage environment.

    - **Use a humidifier during the winter to keep humidity above 30%.** Extremely low humidity can cause materials to become brittle.

- **The Historical Society should consider working with an environmental engineer specializing in cultural heritage institutions, and with expertise in designing climate control systems for historic structures, to develop an appropriate system for the archives storage and work rooms.** Landmark Facilities Group (www.lfginc.com), based in Norwalk, CT, is one reputable firm in the New England area. Other firms can be found on NEDCC's Suppliers List, at www.nedcc.org/resources/suppliers.php. Installation of year-round climate control in Old Derby would be an extremely worthwhile investment because it would benefit the Historical Society's collections as a whole.

- **In all buildings, cover interior and exterior windows in collections storage rooms.** If this is not possible in the Public Library, then UV-filtering film should be installed on the interior windows to block the most damaging light rays. Curtains or shades are more desirable, though, because all light quickens the process of deterioration.

- **In all buildings, fluorescent lamps in spaces where historical records are stored and used should be covered with UV-filtering sleeves.** The filters need to be changed only every seven to ten years, so building maintenance staff should be made aware of them so that they are not accidentally discarded when the bulbs are changed. UV-filtering sleeves are available from suppliers such as Gaylord (www.gaylord.com); see, for example, item number WW-T12.

- **Schedule fire extinguisher training for as many staff members as possible.** Training can provide a certain level of confidence in the event of an actual fire, and it helps ensure knowledge of proper procedures. Fire extinguisher training should take place every other year, or sooner at institutions where there has been significant staff turnover.

- **The Public Library and Historical Society should schedule annual inspections by the Fire Department.** These inspections will allow each institution to address any fire hazards that may have developed over the course of the year.

- **Move materials in the Town Hall's basement vault at least 18 inches away from sprinkler heads to ensure that sprinklers will work effectively in the event of a fire.**

- **Given the building's age and the amount of time that has passed since its last renovation, the Historical Society should inspect Old Derby's electrical system to determine whether wiring is in good condition.**

- **Inspect the roof and drainage systems for all buildings housing historic records at each change of season and after severe storms.** Inspections and preventive maintenance need to take place regardless of whether a roof is under warranty because they provide the opportunity to spot and address problems at an early stage. A roof leak at the Town Hall could damage or destroy records stored in the attic.

- **Install water alarms in the Town Hall basement vault and attic, and in the two Town Clerk vaults in the Library.** Basements and attics are prone to water leaks, and particularly given that these storage areas are not often frequented, a water alarm should be installed to prevent a leak from going undetected for some time.

- **Each organization should prepare a disaster plan.** One overall plan can be prepared for the Town Hall and School Department, but if possible, one person from each department headquartered in the two buildings should be part of a "disaster team" that would be called on to respond in the event of an actual disaster. While it is unnecessary for each department to develop its own plan, each one should identify priority records for salvage. This would be useful in the event of a small-scale event that impacted only individual departments (e.g., a burst pipe). A building-wide priority salvage list should be prepared as well. The Public Library and Historical Society should each have their own plan.

- **Each organization should prepare a small disaster response kit for water-damaged materials.** A complete list of supplies is included in the "Worksheet for Outlining a Disaster Plan" in *PLAM3*, and online at www.nedcc.org, as well as in dPlan™. As an alternative to assembling a kit, each organization might consider purchasing a React-Pak, available from ProText (www.protext.net) as well as other suppliers. Although purchasing a prepared kit is more expensive than buying the supplies separately would be, the convenience may outweigh the extra expense.

- **It is strongly recommended that at least one staff member at each organization be trained in disaster response techniques for library and archival materials.** Training will help responders feel prepared in the event of an actual disaster, which would facilitate a more organized, efficient recovery process. The Town should consider applying for an NEH Preservation Assistance Grant for

Smaller Institutions to fund this type of training. For more information, see http://www.neh.gov/grants/guidelines/pag.html.

- **Supervised, annual cleaning of books, boxes and shelves should be scheduled and implemented to keep dust and dirt to a minimum, and as a means of pest prevention.** Cleaning books and shelves on an established schedule is important because dust and dirt attract insects and provide a substrate for mold growth. The person overseeing preservation at each institution should ensure that this gets done, and should train staff or volunteers who perform the cleaning. For more information, see NEDCC preservation leaflet 4.3, "Cleaning Books and Shelves," in PLAM3 or online at www.nedcc.org.

- **Each organization should develop an Integrated Pest Management program.** IPM is a pest management strategy that focuses on addressing and correcting causes of pest infestation rather than symptoms. It is a best-practice for cultural heritage institutions. IPM strategies include controlling pest habitats, identifying and sealing points of entry, and eliminating food sources to prevent infestation. Additional information about integrated pest management can be found in leaflet 3.11, "Integrated Pest Management," in *PLAM3* or online at www.nedcc.org. Another useful resource is the Massachusetts Department of Food and Agriculture's "Integrated Pest Management Kit for Building Managers," available at http://www.asthmaregionalcouncil.org/about/documents/IPMKitforBuildingManagers.pdf.

- **Additional flat file units are needed to store engineering plans and other oversize documents in the Town Hall.** Take into consideration, though, that there are likely to be duplicates of maps and engineering plans, which could be weeded from the collection. The extent of the duplicates cannot be known until these records are inventoried.

- **The Public Library should either seek ownership of the Cemetery Committee records stored in Historical I, or else work with the Cemetery Committee to find another space to store these materials.**

- **Increase the shelf space available to store oversize volumes properly (horizontally).** This is needed in the Town Hall, Public Library, and Historical Society. Oversize volumes are best shelved in stacks no more than two or three volumes high.

- **Rehouse bound and unbound materials as needed, according to the recommendations outlined in Sections III.C and III.D of the report. Overall recommendations include:**

    - **Placing damaged, especially fragile, and unique volumes in phase boxes to provide them with support as well as protection from light, dust and water.**

    - **Transferring pamphlets to boxes or, where appropriate, document preservation binders.**

    - **Transferring unbound documents and manuscripts that are not currently housed, or that are housed in ring binders or other damaging enclosures, to acid-free, lignin-free, buffered folders and boxes.**

- **Alleviating overcrowding in boxes, folders, and file cabinet drawers to ensure that items remain in good condition (or to deter further damage).**

- **Placing glass plate negatives and cased photographs in four-flap enclosures and archival boxes.**

- **Placing scrapbooks and photo albums in drop-front archival boxes to provide them with overall stability and protection from light, dust, and water.**

- **Create a preservation copy and at least one use copy of each original audiovisual recording, and store them separately from the masters to prevent total loss of information in the event of a disaster.**

- **Create preservation photocopies of newspaper clippings.** Even under optimal conditions, newsprint has a short useful life relative to other types of paper commonly found in archives. The paper used for these copies should be acid-free, lignin-free, and buffered.

- **Also create preservation photocopies of fragile School Department records.** To prevent further damage, copies of these records should then be used instead of the originals (though the originals should still be retained).

- **See that at least two copies exist of each microfilm master negative, including a duplicate negative (or "print-master negative") and a use copy.** For more information, see preservation leaflet 6.1, "Microfilm and Microfiche," in PLAM3 or online at www.nedcc.org.

- **To ensure that information is not lost in the event of a building-wide disaster, see that microfilm master negatives are stored off-site from duplicate negatives.** Master negatives need to be stored at a maximum temperature of 65°F and a relative humidity (RH) of 35%, ±5%.

Long-term Priorities (steps to be taken once short and medium-term goals have been accomplished; and/or, larger general goals that will require major funding and/or significant reorganization of resources)

- **Integrate each organization's historic records into an online catalog.** Following standard cataloging practices for libraries and archives will support this goal. Note that while MARC records are created for individual books, for archival materials it is more common to create a collection-level MARC record.

- **In the long term, participating organizations should consider submitting descriptive information about their archival collections to the Library of Congress' National Union Catalog of Manuscript Collections (NUCMC).** More information is available at http://www.loc.gov/coll/nucmc/index.html.

- **The Town should plan long-term to expand the amount of storage space available for all historic Town records. The space should be designed to accommodate existing records as well as future growth, and it should be secure, with year-round climate control and a fire suppression system.** The staff at each of the organizations covered in this assessment have done an excellent job of working with the space they have, but this cannot continue indefinitely. Spaces will become even

more crowded, and without relocation to a better storage environment, many records will continue to deteriorate at an accelerated pace.

- **The Historical Society should consider installing a fire suppression system.** Wet-pipe systems are an excellent choice for cultural heritage institutions because they are relatively inexpensive to install and maintain and they have a low failure rate. For extensive information about the various systems available, see NEDCC preservation leaflet 3.2, "An Introduction to Fire Detection, Alarm, and Automatic Fire Sprinklers," in *PLAM3* or at www.nedcc.org.

- **The Town Clerk, as well as representatives from each of Hingham's cultural heritage organizations, should work with the Town's Emergency Management Department to integrate historic records into the Town-wide disaster plan.** NEDCC, the Massachusetts Board of Library Commissioners, and the Massachusetts State Archives have developed a framework for coordinated, area-wide emergency response. For more information, see http://statewideplan.pbwiki.com/.

- **Eventually, the Public Library should replace the wooden flat file unit with one made from powder-coated steel.** Wood emits acidic gases as it deteriorates. Paper-based materials stored in wooden drawers or on wooden shelves deteriorate more quickly because they absorb off-gassed chemicals.

- **As planned, in the long term the Historical Society should expand shelving for its collections.** One or two additional flat file units are needed. Records center shelving can continue to be used for boxed storage if necessary, but powder-coated steel shelving with end caps should be installed for proper storage of bound materials.

- **The Public Library should assess its scrapbooks to determine, on a case-by-case basis, whether they should be reformatted.** Assessment criteria should include condition, research value, artifactual value, and anticipated level of use. Preservation photocopying would be an excellent option for scrapbooks with solely informational value and in good condition since the copy could be used in lieu of the original, thereby preventing unnecessary handling. Preservation photocopies can be bound for greater ease of use.

- **Plan to transfer recordings to more stable formats periodically.** Recordings should be transferred to an affordable, current, widely-supported format that offers the lowest level of compression. Transfers from tape should take place approximately every 10 years, while transfers from CD should take place approximately every five years.

- **Film permanent Town records that have not been microfilmed.**

Hingham's historical records, which span from 1635, the year of its incorporation, to the present, have the potential to be a rich resource for a wide variety of researchers locally, nationally, and globally. Over the course of the next year or so, the Town will develop a "master plan" to preserve and catalog these materials, with a long-range view of digitizing selected materials to make them more widely accessible. The long-term value of such a project could be enormous if records are selected for digitization strategically, and if the resulting digital resources are managed properly. In that vein, it is important to note that cataloging of materials must precede their digitization. Catalog records will provide the basic descriptive metadata that will make digital surrogates retrievable. Intellectual control of historic

documents Town-wide will also support selection for digitization because it will allow decision-makers to identify collection strengths, and to select materials for which digital surrogates will showcase and enhance the intellectual value of the collections as a whole.

As Town and organizational leaders work together to develop the master plan, they should:

- **Be sure to include in the preservation plan a list of high-priority actions that are achievable in the near future.** Small steps—such as straightening rows of leaning books, or raising boxes and framed items off the floor—can have a major impact on preservation.

- **Create a timetable that will allow the plan to be carried out effectively.**

- **Consider the preservation plan a living document to be reviewed and updated annually.** Periodic revision will be needed as circumstances change, and as preservation needs are addressed and new ones are identified.

I hope that this report will help the Town of Hingham to plan effectively for the preservation of its historical records. If this report has raised any questions, or if I can provide any additional information, please do not hesitate to contact me.

Respectfully submitted,

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May 21, 2009

Table of Contents

INTRODUCTION

Paper-based historical records in the Town of Hingham were assessed for preservation planning purposes by Angelina Altobellis, Assessment Program Coordinator of the Northeast Document Conservation Center (NEDCC) in Andover, MA from February 2-5, 2009. The assessment was funded by the Town's Community Preservation Act. Focusing on Town Clerk and Historical Commission records, as well as the records of the School Department, Public Library Historical Collection, and Historical Society Archives, it evaluated the building and environment as they relate to the preservation needs of the records; examined current policies, storage and handling procedures; and assessed the general condition of records. Invaluable information was provided by Eileen McCracken, Town Clerk; Alexander Macmillan, Chair, Hingham Historical Commission; Andrea Young, Administrator, Hingham Historical Commission; Jeff Pizzi, Town Hall Maintenance Supervisor; Dennis Corcoran, Director, Hingham Public Library; Juliana Holbrook, Head of Technical Services, Hingham Public Library; and Suzanne Buchanan, Executive Director, Hingham Historical Society.

This report will attempt to draw attention to specific risks to the long-term survival of Hingham's historic records, and will provide targeted recommendations for improvements, with the aim of facilitating the development of a long-range, town-wide preservation plan.

Two concepts are necessary for evaluating the adequacy of preservation in any library or archives:

> ***Responsible custody*** is defined by the Commission on Preservation and Access Task Forces on Archival Selection as the provision of "a level of environmental management, housing, care and maintenance that will retard further chemical deterioration and protect materials from physical damage."[1] These preventive measures include climate management, protective enclosures, fire detection and suppression, effective security, disaster planning, and training staff and users to handle and care for the collection appropriately.
>
> ***Optimal Storage*** is defined as meeting or exceeding the guidelines proposed by professional organizations and national standards-setting organizations. Such guidelines and standards are authored by committees made up of professionals in the field, and they are informed by recent scientific research into the deterioration of collections. The challenge for standards-setting organizations (and for collections-holding institutions) is to translate scientific findings into practical and affordable recommendations for storage. In many cases, optimal storage may not be achievable, but institutions should be aware of the ideal as they work towards providing the best conditions possible.

Every institution should provide responsible custody for all its collections. The provision of optimal storage conditions for collections of long-term value to the institution should be a primary goal.

[1] Task Forces on Archival Selection. *The Preservation of Archival Materials*. Washington, DC: The Commission on Preservation and Access, April 1993, p. 3.

This report is intended for continuing reference. The first portion of the report contains observations and recommendations specific to Hingham's historic records and the buildings housing them. Observations are in standard type, while recommendations are bulleted and in bold type. Photographs taken during the site visits are included as an appendix, followed by a second appendix containing general background information and best practices for the topics covered in the assessment.

For additional best practices information, reference will be made to preservation leaflets in Preservation of Library and Archival Materials: A Manual, 3rd edition, edited by Sherelyn Ogden (Andover, MA: Northeast Document Conservation Center, 1999), referred to hereafter as *PLAM3*. Many of these leaflets have been revised and updated, and are available in the "Preservation Leaflets" section of NEDCC's website at www.nedcc.org.

Archival and preservation supplies will be recommended throughout the report. Most of these supplies are available from multiple vendors, and records custodians in each office or organization should select the one that best meets their needs in terms of cost, shipment method, etc. An extensive list of suppliers is available on the NEDCC website, at www.nedcc.org/resources/suppliers.php. Examples of particular items given in the text are intended as illustrations, not recommendations of one supplier over another.

I. COLLECTION MANAGEMENT

A. Mission Statement & Collection Policies

Town Clerk, Historical Commission & School Department
Retention, disposition and access of public records are governed by state records retention schedules and guidelines set forth in Chapter 66 of the Massachusetts General Laws.

Public Library
A mission statement and a limited collection management policy were prepared for HPL's Historical Collection in 2003. The collection management policy covers formats collected; copyright; gifts and acquisitions; hours of service; and reading room guidelines. The mission statement includes preservation, and describes the subjects collected. It reads as follows:

> *The Library's Historical Collection is intended to serve as a resource for research, study and understanding of the Town's history. In pursuing this mission, the Library will:*
>
> - *collect, organize, preserve and describe records of permanent historical value related to the Town's history, governance, commerce, individuals and organizations. Where relevant to the Town's history, material on surrounding municipalities may be included in the collection.*
> - *provide facilities for the retention, preservation and research use of the collection.*
> - *provide guidance to individuals using the collection.*

Historical Society
HHS has mission statements both for the institution as a whole and for the archives, which is excellent. The institutional mission statement incorporates both preservation and the overall collecting scope, stating that HHS will "collect, preserve and exhibit for cultural and educational purposes, items of historical significance, including those related in particular, to Hingham and Hingham families." The archives mission statement, which dates to 2004, adds that

> *…In addition, the archives are to serve as an educational resource and the HHS encourages research in its collections.*
>
> *In carrying out its mission, the HHS Archives:*
>
> *a) is the official repository of Hingham Historical Society records;*
> *b) appraises, accessions, arranges, describes and preserves materials transferred to its custody while providing access to its holdings, in accordance with accepted archival principals;*
> *c) advises, supports, and cooperates with other societies and associations having similar purposes, along with other groups, organizations, and government agencies concerned*

with the preservation of Hingham and its region, especially in relation to its history and historical character.

HHS's collection management policies for the archives contain a collection summary, acquisition guidelines, and a description of activities to be undertaken in "cooperation with other institutions," including Town offices and the Public Library. The institutional collection management policy covers acquisition procedures, policies for incoming and outgoing loans, and deaccession procedures.

- **The Town Clerk should prepare a written collection management policy for the records under her care.** A local collection management policy will establish practices and will help ensure that they are implemented consistently over time. Prepare one document containing policies and procedures for preservation, including handling guidelines, maintaining security, storage methods, environmental monitoring and targets, preservation-quality microfilming, library binding, and maintaining records of any conservation treatments performed on Town records. For more information, see "Collections Policies and Preservation," preservation leaflet 1.5 in *PLAM3*, or online at www.nedcc.org.

- **The Public Library should expand its collection management policy for the Historical Collection.** A comprehensive collection management policy is essential to the success of preventive conservation efforts. Such a document will serve the purpose of capturing and consolidating broad institutional knowledge, and will ensure that established practices are implemented consistently over time. Specifically, more detailed policies and procedures are needed for accessioning, maintaining security, and proper handling. The overall policy needs to be augmented to cover deaccessioning, as well as preservation, including environmental monitoring and environmental targets; selection of archival housing supplies; preservation-quality exhibition; loans; library binding; preservation-quality microfilming; and maintaining records of any conservation treatments performed.

- **The Historical Society should expand the collection management policy for its archives to include policies and procedures for preservation, as recommended above for the Public Library.**

B. Staffing & Budget

The Town of Hingham is supporting preservation planning for its historic records with funding obtained through Community Preservation Act. To date, CPA funds have supported a study of cataloging and preservation needs, performed by Amy Benson in March, 2008; and this preservation assessment.

Town Clerk, Historical Commission & School Department

Per Massachusetts General Law, the Town Clerk is responsible for the preservation of town records, but it is unclear whether she or her staff have the amount of time needed to gain better intellectual control over the materials, and to perform necessary preservation activities, such as environmental monitoring and basic rehousing. It is also unclear which staff members have been assigned responsibility for preservation of the Historical Commission and School Department records. Information was not available on department-level funding provided for preservation.

Public Library
The Head of Technical Services is responsible for preservation of the Historical Collection. She has limited time to devote to working with the collection, however, which is accessible by appointment only. Although the Library has no budget for preservation supplies, the Head of Technical Services reported that the Library Director is extremely supportive of professional development for staff, and budgets some funding for that purpose. This is excellent.

Historical Society
The Executive Director is the staff member primarily responsible for preservation of HHS collections. She oversees a contract archivist who works one day per week, and eight volunteers representing .25 FTE (full-time equivalencies). Volunteers provide assistance with organizing collections and entering cataloging data into a Past Perfect database. Funds for preservation are provided in the "Collections Acquisitions and Maintenance" budget line item.

- **The Town should add a line item to its budget to carry out preservation activities recommended in this report.** In the short- and medium-term, funding is needed to purchase archival supplies and to fund preservation training. Funding may also be needed for additional staffing, and in the long term, it will be needed for expanded records storage space and additional storage furniture.

- **When possible, the Town might consider making funds available to hire an archivist/records manager to assist the Town Clerk (and other Town departments) with records management and preservation.** The Town of Burlington has taken this route; a complete job description for that position is available online at http://www.burlington.org/clerk/archives/Job.htm. The person hired for this job should have formal archival training.

    - **In the meantime, the Historical Commission and School Department will need to assign responsibility for preservation of their records.**

- **Each organization will need to allocate staff time for carrying out ongoing preservation activities as recommended in this report.** These will include activities such as environmental monitoring and disaster planning, which will not require extensive amounts of time but will nevertheless need to be integrated into existing job descriptions. Note that time will also need to be allocated for one-time actions, such as rehousing of materials.

- **The Public Library should establish a budget line for purchasing preservation supplies (i.e., archival folders and boxes).** Even if only a small amount can be budgeted, it will demonstrate to granting agencies the Library's commitment to preservation.

- **Seek grant funding for preservation.** Consider applying for a Preservation Assistance Grant to purchase shelving, archival enclosures, and/or environmental monitoring equipment. For more information, see www.neh.gov/grants/guidelines/pag.html.

    - **See also the American Heritage Preservation Grant Program, administered by the Institute of Museum and Library Services (IMLS) with funding from Bank of America.** Grants of up to $3,000 are awarded for activities including treatment and rehousing, as

well as staff time to carry out preservation projects. The deadline for this grant is expected to be in mid-September. For more information, see http://www.imls.gov/collections/grants/boa.htm.

- **See also the National Historic Publications and Records Commission (NHPRC) Grant Program, administered by NHPRC, a statutory body of the National Archives and Records Administration (NARA).** This might be a source of funding for processing projects. For more information, see http://www.archives.gov/nhprc/apply/program.html.

C. Intellectual Control

Town Clerk, Historical Commission & School Department

Complete inventories of the Town Clerk's, Historical Commission's, and School Department's records do not exist. The Town Clerk's records are arranged at the group level. While a complete inventory is unavailable, in the report from her cataloging and preservation needs study, Amy Benson observed that indexes are available for some records. The Historical Commission's records are arranged in several ways. Records pertaining to historic properties are arranged by street address. Historic District Commission records are arranged by historic district. Records pertaining to Commission activities are arranged by function. School Department records are arranged chronologically within groups.

Public Library

The Historical Collection's books are cataloged according to the Dewey Decimal system. All have MARC records, and are searchable through the Old Colony Library Network (OCLN) Catalog. Finding aids were prepared by the Head of Technical Services for the Richardson Bicentennial Collection and its 1980 supplement, but the bulk of the archival collections are not cataloged or inventoried. Microfilmed manuscripts and rare pamphlets are indexed and described in a frame-by-frame list.

Historical Society

Finding aids are available for many of the Historical Society's archival collections, and data entry is underway to catalog the photographs, books, and archival materials in a Past Perfect database. A March, 2008 memo from the archivist noted that the database contained 1,302 records for the Photograph Collection; 456 records for the Object Collection; 266 records for the Library Collection; and approximately 200 records for the Archival Collection. According to Amy Benson's report, these figures represented "less than 5% of the entire collection."

- **Prepare a complete inventory of the collections in the Town Clerk's office, School Department, Historical Commission, Public Library, and Historical Society.**

    - **The municipal records inventory should include records scheduled for interim and permanent retention to facilitate timely implementation of retention schedules.** The Massachusetts State Archives Records Management Unit (http://www.sec.state.ma.us/arc/arcrmu/rmuidx.htm) can provide assistance in

inventory and appraisal of public records. For more information, contact Terry French, Senior Records and Information Manager, at 617-727-2816, ext. 259, or by email at terry.french@sec.state.ma.us.

- **More in-depth information about intellectual control of archival collections can be found in *Introduction to Archival Organization and Description*, by Michael J. Fox and Peter L. Wilkinson.** This resource is available online at http://www.getty.edu/research/conducting_research/standards/introarchives/index.html.

- **Evaluate Town records for retention and disposition.** Disposal of inactive records will likely free up at least some storage space, and once it is known which records are permanent, the Town can begin to establish more specific preservation priorities.

- **The Historical Society should continue to catalog its collections and add records to its Past Perfect database.**

- **It is important to note that cataloging of materials must precede their digitization.** Catalog records will provide the basic descriptive metadata that will make digital surrogates retrievable. Intellectual control of historic documents Town-wide will also support selection for digitization because it will allow decision-makers to identify collection strengths, and to select materials for which digital surrogates will showcase and enhance the intellectual value of the collections as a whole.

- **Integrate each organization's historic records into an online catalog.** Following standard cataloging practices will support this goal. Note that while MARC records are created for individual books, for archival materials it is more common to create a collection-level MARC record.

- **In the long term, participating organizations should consider submitting descriptive information about their archival collections to the Library of Congress' National Union Catalog of Manuscript Collections (NUCMC).** "A free-of-charge cooperative cataloging program operated by the Library of Congress, the National Union Catalog of Manuscript Collections (NUCMC) creates online records in OCLC WorldCat on behalf of eligible archival repositories throughout the United States." (Website, Library of Congress) More information is available at http://www.loc.gov/coll/nucmc/index.html.

II. THE BUILDING & ENVIRONMENT

A. Facilities

The materials included in this assessment are housed in four separate buildings: the Town Hall, the adjacent School Department, the Public Library, and the Historical Society.

The Town Hall houses the Town Clerk's office, the Historical Commission, and a number of other Town offices. It is a three-story building with an attic and a finished basement. It was originally constructed as a high school, and housed a junior high school until the Town offices moved there in 1988. The building underwent a major renovation in 1998.

The School Department is a three-story building adjoined to the Town Hall by a three-story connector. It shares the building with the Light Plant. Both the building and connector were constructed in 1961, and renovated along with the Town Hall in 1998.

Both the Town Hall and School Department buildings are maintained by Town maintenance staff. A written building maintenance schedule does not exist, but the Maintenance Supervisor reported that inspection and maintenance of the building and systems are performed on a routine basis.

The Public Library is situated in two buildings, both of which were constructed in 1966. They were linked by two corridors and renovated in 2001. During the renovation, the Library moved to temporary headquarters in an old school on East Street, and all collections were removed from the building. The Historical Collection was moved into a hot, dry closet. Following the renovation, it was transferred to two dedicated rooms adjacent to the Reference Desk. (In this report, those rooms will be referred to as "Historical I" and "Historical II.") There is not a written building maintenance schedule in operation, but a log of building maintenance and problems is kept, which is excellent.

The Historical Society is headquartered in "**Old Derby**," a three-story building constructed in 1818. The building was used as a school house until it was acquired by the Society in 1966. The archives, as well as a number of artifacts and a few pieces of furniture, are stored primarily in one large room on the third floor. An adjacent room is used for work space, and it serves as a holding area for unprocessed materials. The second floor consists of a function hall that the Society has rented out for a number of years; rental of that space has become less frequent in recent years. A gift shop, catering kitchen, and the Executive Director's office are located on the first floor. There is not a written building maintenance schedule in operation, but like the Public Library, HHS keeps a log of building maintenance and problems.

- **Written maintenance schedules should be developed for each building.** A written schedule that outlines what will be done from month to month will help staff keep track of maintenance activities. It will also help ensure that maintenance and inspections remain consistent over time, and in the event of staff changes.

- **A log of building maintenance and problems should be kept for the Town Hall and School Department.** Preserving information about the building and systems will be extremely useful in the long term because it will provide a context for understanding any problems that may arise. It will also support informed decision-making for future repair or construction projects.

- **Each institution should ensure that its building maintenance records include work logs, floor plans, system specifications, contractors' and manufacturers' warranties, and maintenance agreements.**

- **The Town should plan long-term to expand the amount of storage space available for all historic Town records. The space should be designed to accommodate existing records as well as future growth, and it should be secure, with year-round climate control and a fire suppression system.** The staff at each of the organizations covered in this assessment have done an excellent job of working with the space they have, but this cannot continue indefinitely. Spaces will become even more crowded, and without relocation to a better storage environment, many records will continue to deteriorate at an accelerated pace.

B. Temperature & Relative Humidity

Town Hall & School Department

The HVAC system for the Town Hall and School Department was installed in 1998. It is zoned and runs on day and night settings. Day settings begin at 6:00 a.m., and are staggered; the system enters into night settings at 4:30 p.m. The system does have an override capacity, and it is maintained quarterly by a local vendor. Information about the system's air filtration capacities was not provided.

Environmental monitoring independent of a building management system is not performed, so the extent of temperature and humidity levels and fluctuations in records storage areas is unknown. Climate control does not extend to the Town Hall attic. The Town Maintenance Supervisor reported that the space becomes quite warm in the summer, and as might be expected, it felt quite cold on the day of the site visit in early February. If the temperature and humidity levels in the attic are as unstable as anecdotal evidence suggests, they are causing the records stored there to deteriorate at an accelerated pace.

Public Library

The Public Library's HVAC system also operates on day and night settings, which coincide with library hours. All system elements except the boilers were installed in 2001. The boilers (of which there are two) were installed in 1965, and converted from oil-fired to natural gas in 2001. The Library was planning to replace these boilers with smaller, high-efficiency gas-fired boilers in FY 2010, but budgetary constraints have resulted in deferral of this project to FY 2011. The system is set to maintain a temperature of 68°F "in most areas." This is appropriate. The mezzanine reportedly tends to be quite warm and "requires the use of a split-system AC to maintain comfort even in winter." The system is not designed to maintain a constant relative humidity level. It offers some particulate filtration. The system

is inspected and maintained on “a comprehensive year round” basis under contract with a local vendor. Environmental monitoring of Historical I and II is not performed.

As will be explained in Section II.E below, the Library has a history of water leaks. The leaks may be contributing to reduced air quality because they have reportedly resulted in recurring mold growth in the ceiling above the electrical room adjacent to the Technical Services area, and above the ceiling in the café and Children’s areas. The head custodian has cleaned the mold several times, but the continuing leakage has likely produced an environment that remains conducive to mold growth. This analysis of the situation is based on discussions with Library staff, not on personal observation, though, and in order for the extent of the mold problem to be accurately determined, it will be necessary for the Library to consult a specialist in mold remediation.

Historical Society

Old Derby does not have year-round climate control, but its Executive Director and Board are exploring the possibility of installing a zoned system. A recent estimate they received set the price tag for this project at $80,000. The building is heated in winter with electric wall-mounted units, which are turned on only when staff or volunteers are present. The temperature in the archives storage room ranged from 32°F to 37°F on the day of the site visit. There is a window air conditioning unit in the adjacent work room, and space heaters are used for staff and volunteer comfort.

Since September 2008, environmental monitoring has been performed with a HOBO data logger in the archives storage room and on the first floor. A chart provided by the Executive Director and reviewed for this assessment displayed data collected in the archives storage room from September 23rd through October 6th. It revealed high relative humidity, higher than ideal temperatures, and significant fluctuations in both. For example, the temperature shifted from 73°F to 60°F over the course of two days, while over the course of a single day during the same period, the relative humidity shifted from 69% to 54%. (Figure 1) These levels fall well outside the recommended maximum daily fluctuation levels of ±2°F and ±3%RH. Moreover, the top temperature and relative humidity readings in this span are well above the recommended maximum levels of 70°F and 50%RH.

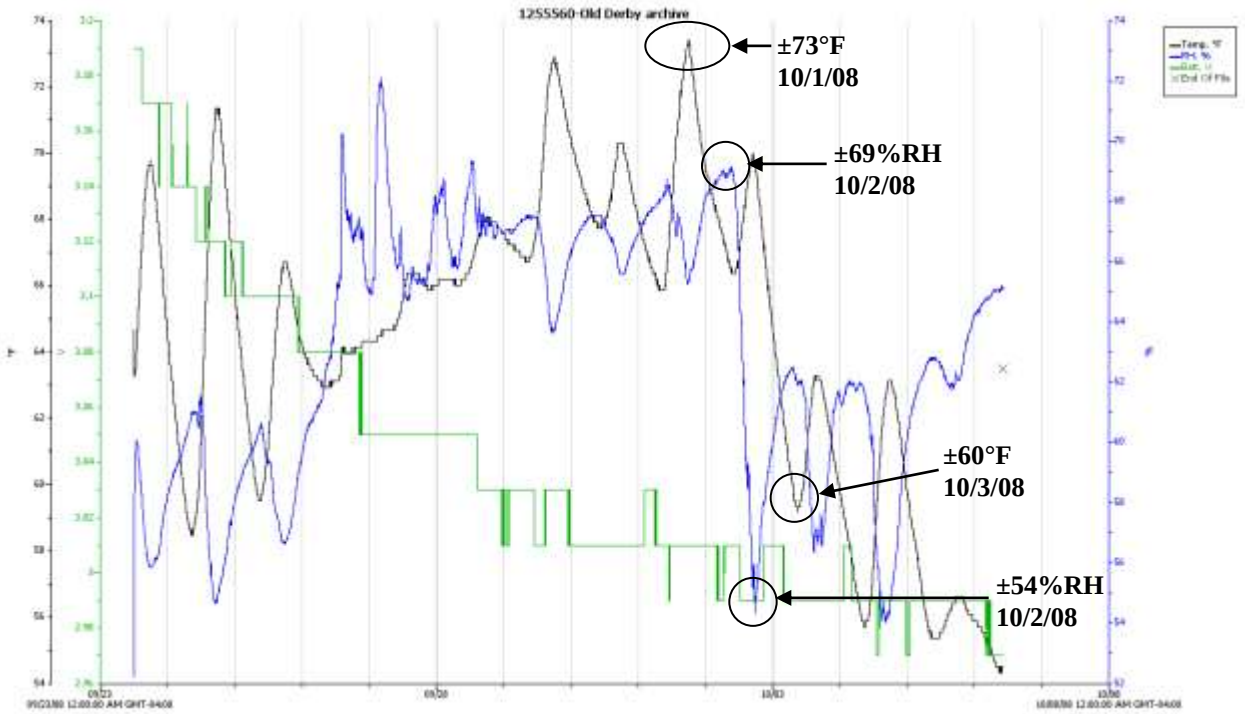

Figure 1.

- **Environmental monitoring should be carried out in the Town Hall records storage spaces, and in Historical II at the Public Library.** Data loggers, which automate data collection, would be the most time-efficient devices. Ongoing environmental monitoring will help determine the effectiveness of HVAC systems, and will help to make the case for necessary adjustments. In the Town Hall attic, environmental monitoring data collected over two changes of season will provide an accurate picture of climate levels and fluctuations. This information might support efforts to extend climate control to the attic, or to find a more suitable storage space for the records stored there. For more information on environmental monitoring and devices, see NEDCC preservation leaflet 2.2, "Monitoring Temperature and Relative Humidity," in *PLAM3* or online at www.nedcc.org.

- **Keep temperature and relative humidity levels as stable as possible in all spaces housing historical records.** This is one of the most important actions Hingham can take to increase the longevity of these materials. Every 9°F increase in temperature cuts in half the lifespan of paper-based materials; conversely, every 9°F decrease in temperature doubles it. Maintaining appropriate and consistent levels will entail different steps in each building:

    - **In the Town Hall, School Department, and Public Library, the HVAC system should be set at one level that is maintained 24 hours a day, 7 days a week.** The temperature should remain at or below 70°F, with daily fluctuations not surpassing ±2°F.

        - **Use portable dehumidifiers to keep humidity below 50%.** Elevated levels of relative humidity can prompt mold growth, which can become a significant problem

in very little time. Environmental monitoring data will help staff determine when dehumidification is needed.

- **Explore options for stabilizing temperature and relative humidity in the Town Hall attic.** The Town might consider working with an environmental engineer specializing in cultural heritage institutions. If temperature and humidity in the attic cannot be stabilized at appropriate levels, the records stored there will need to be moved to a space with year-round climate control.

- **At the Historical Society, use window air-conditioning units to control summertime temperature and humidity in the archives storage room.** A temperature at or below 70°F would be acceptable, but in the long term, aiming to keep the temperature at or below 65°F would be even better, because the collections contain photographic materials, which require a cooler storage environment.

  - **Use a humidifier during the winter to keep humidity above 30%.** Extremely low humidity can cause materials to become brittle.

- **Installation of year-round climate control in Old Derby would be an extremely worthwhile investment because it would benefit the Historical Society's collections as a whole.** Although the cost of this project may mean that it cannot be carried out in the near future, it should be a high priority for action.

- **The Historical Society should consider working with an environmental engineer specializing in cultural heritage institutions, and with expertise in designing climate control systems for historic structures, to develop an appropriate system for the archives storage and work rooms.** Landmark Facilities Group (www.lfginc.com), based in Norwalk, CT, is one reputable firm in the New England area. Other firms can be found on NEDCC's Suppliers List, at www.nedcc.org/resources/suppliers.php.

- **The Public Library should contact a vendor specializing in mold remediation to identify the cause of the mold problem, evaluate its extent, and to perform necessary clean-up.** Munters, a company that provides such a service, offers on-site consultations free of charge, and can provide an estimate. They can be contacted at (978) 388-4900. Although the mold can be removed, it is important to understand that mold problems will be recurring until the leaks and moisture seepage potentially triggering mold germination are repaired.

C. Protection from Light

Town Hall & School Department

Records storage spaces in the Town Hall are illuminated by fluorescent lamps or by a combination of fluorescent lamps and sunlight. There is a window in the back records storage room in the Town Clerk's office that is covered with metal blinds kept partially open. Lights in the basement and attic are turned

off when the spaces are not in use, which is good. Most of the attic storage spaces have uncovered windows, with the result that many of the materials in these spaces are exposed to sunlight. (Figure 2) The conference room housing the School Department's materials is illuminated by overhead fluorescent and incandescent lamps, and by fairly low levels of sunlight.

Figure 2.

Public Library

Historical I and II are illuminated by overhead fluorescent lamps and some natural light filtering in through interior windows. Books and some unbound materials are exposed to low light levels for long periods: for example, an assortment of photographs, rolled items, and bound newspapers rests on top of a low shelf beside one of the interior windows. (Figure 3) Fluorescent bulbs are not covered with UV-filtering sleeves, nor are windows coated with UV-filtering film. While main lights in Historical I and II are turned off when the rooms are not in use, Historical II has a fluorescent "security light" that is kept on 24 hours a day, as required by fire code.

Figure 3.

Historical Society

The archives storage and work rooms in Old Derby are illuminated by incandescent lamps that are turned off when the rooms are not in use. Both the archives storage and work rooms have tall windows. They are covered with shades that are pulled down in the storage room, but not in the work room. Materials that are being processed are left out on tables, unprotected, at the end of the day. Apart from exposing the materials to a higher risk of water damage (discussed in Section II.E below), materials left out in the work room are being damaged by sunlight. (Figure 4) The Executive Director is considering having Mecho Shades installed building-wide. This would be an excellent investment that would have a long-term positive impact on the collections.

Figure 4.

- **In all buildings, cover interior and exterior windows in collections storage rooms.** If this is not possible in the Public Library, then UV-filtering film should be installed on the interior windows to block the most damaging light rays. Curtains or shades are more desirable, though, because all light quickens the process of deterioration.

- **In all buildings, fluorescent lamps in spaces where historical records are stored and used should be covered with UV-filtering sleeves.** The filters need to be changed only every seven to ten years, so building maintenance staff should be made aware of them so that they are not accidentally discarded when the bulbs are changed. UV-filtering sleeves are available from suppliers such as Gaylord (www.gaylord.com); see, for example, item number WW-T12.

- **Each institution should make it a collections maintenance policy to turn out lights in records storage rooms when they are not in use.** It is excellent that this is already in practice. Formalizing this measure in a written policy will help ensure that it is continued over time, and after changes in staff.

- **Instruct staff and volunteers working with historical collections to put materials away when they are through working with them each day.** Left in the open, they are vulnerable to damage from light and water, and will accumulate dust and dirt, which can cause soiling and abrasion.

- **The Public Library should arrange the materials in Historical II so that only materials in boxes or closed cabinets are located in the vicinity of the security light.** To curb light damage, books and any other unenclosed materials should be placed as far away from the security light as possible.

D. Protection from Fire

Town Hall & School Department

The Town Hall and School Department building have smoke detectors building-wide as well as a wet-pipe fire suppression system. The detection system is wired through a master box to the Fire Department. Inspection and maintenance—which take place quarterly for the detection system, and annually for the suppression system—are performed by the building manager. Sprinklers in the basement vault are located along one wall. Materials have been placed on top of shelving units over the years, where they are stacked almost to the ceiling. (Figure 5) In several places, these materials block sprinkler heads, which would significantly reduce their effectiveness if a fire were to ever break out.

Figure 5.

Public Library

The Public Library is protected from fire by ionization smoke detectors and heat sensors, and by a wet-pipe fire suppression system in all areas of the building but Historical II, which has an inert gas (FM-200) suppression system. The fire alarm is wired directly to the local Fire Department. The systems are inspected quarterly by a local vendor. Portable fire extinguishers are available, but some staff turnover has taken place since the last training. The building is inspected "occasionally" by the Fire Department, when Fire Department personnel are reacquainted with the building layout and systems. Fire drills are conducted approximately every two years. At least one space heater is used, specifically in the Children's office, but it is unplugged when it is not in use, which is good.

Historical Society

Old Derby is protected from fire by smoke detectors that are hard wired to Atlas Alarm Corp. in Weymouth, MA. They are inspected annually by the Town Inspector, Buildings and Grounds Manager. The building does not have a fire suppression system. Portable fire extinguishers are available, but the staff has not been trained to use them. The building is not inspected on a regular basis by the Fire Department.

- **Schedule fire extinguisher training for as many staff members as possible.** Training can provide a certain level of confidence in the event of an actual fire, and it helps ensure knowledge of proper procedures. Fire extinguisher training should take place every other year, or sooner at institutions where there has been significant staff turnover.

- **The Public Library and Historical Society should schedule annual inspections by the Fire Department.** These inspections will allow each institution to address any fire hazards that may have developed over the course of the year.

- **Personnel responsible for preservation activities at each institution should make firefighters aware of the location of priority materials.** It is sometimes possible to take these into account in the event of a fire.

- **Move materials in the Town Hall's basement vault at least 18 inches away from sprinkler heads to ensure that sprinklers will work effectively in the event of a fire.**

- **The Historical Society should consider installing a fire suppression system.** Wet-pipe systems are an excellent choice for cultural heritage institutions because they are relatively inexpensive to install and maintain and they have a low failure rate. For extensive information about the various systems available, see NEDCC preservation leaflet 3.2, "An Introduction to Fire Detection, Alarm, and Automatic Fire Sprinklers," in *PLAM3* or at www.nedcc.org.

- **Given the building's age and the amount of time that has passed since its last renovation, the Historical Society should also inspect Old Derby's electrical system to determine whether wiring is in good condition.**

E. Protection from Water

Town Hall & School Department

The Town Hall has a pitched roof that was last replaced in 2005. Drainage of the roof is effected by gutters and downspouts. Staff did not report any problems with leaks or seepage into the building. The School Department's building has a flat roof that was last replaced in 1998; the method of drainage was not apparent or reported. Inspections and preventive maintenance are not conducted for the roof of either building. The Maintenance Supervisor reported that the warranty for the School Department building just expired, and that the Town is looking into either extending the warranty, or contracting with Gibson Roof, a local company, to perform annual inspections. Numerous Town records are stored in a basement vault in the Town Hall, some of which are stored directly on the floor due to lack of shelf space. A great many of the Historical Commission's maps and plans are stored on the floor of the attic. In general, shelving and cabinets in the various storage locations across the two buildings stand between three and five inches off the floor, but the lowest flat file drawer in the Town Hall vault stands only an inch or so off the floor. Materials in this drawer would be saturated in the event of a major flood or water leak.

Public Library

As noted in Section II.A above, the Public Library is headquartered in what were two separate buildings (the "original Library" and the "former Town Office building"), attached by a connector and renovated in 2001. Both sections have a rubber membrane roof, but while the former Town Office building's roof was just replaced in 2007, the original Library's roof was last replaced in the mid-1980's. A capital drive is underway to raise money for a new roof for this part of the building. Staff reported persistent problems with water leaks from the original Library roof, and they have marked the locations of leaks with red tape on the ceiling so that they can monitor them. Modifications to that roof were made in early 2008 "to reduce puddling," but water still finds its way through the roof during heavy rains with

northeast winds, when moisture penetrates the rooftop HVAC fan unit cabinets, and travels through to the outer interior metal conduits. As explained in Section II.B above, this may be the source of the mold problems in several places above the ceiling. Drainage of both Library roofs is effected by scuppers and downspouts. The Library's schedule for inspecting the roof and drainage is excellent: both are visually inspected "approximately monthly by library maintenance staff," and a qualified roofer performs an annual inspection of the roof.

While the Public Library's historical collections are stored in Historical I and II, two vaults, located on the ground level of the old Town Hall section of the building, hold a large quantity of Town Clerk records. Shelves in the various storage areas have three to four inches of floor clearance. Historical I and II, as well as both vaults, have materials stored directly on the floor. (Figures 6, 7)

Figure 6.

Figure 7.

Historical Society

A three-tab asphalt shingle roof was installed on the Old Derby building in 1996. Drainage is effected by gutters and downspouts. Neither leakage nor seepage have been a problem, and it was reported that "while there is a yearly inspection of all [Historical Society] properties, the R.E. Committee monitors the buildings on a regular basis." This is excellent.

At the time of the site visit, a few boxes of archival materials were stored directly on the floor in the archives storage room and in the work room. As explained in Section II.C above, archival materials being processed had been left out in the open, which places them at higher risk of water damage because they would be unprotected in the event of a leak.

- **Inspect the roof and drainage systems for all buildings housing historic records at each change of season and after severe storms.** Inspections and preventive maintenance need to take place regardless of whether a roof is under warranty because they provide the opportunity to spot and address problems at an early stage. A roof leak at the Town Hall could damage or destroy records stored in the attic.

- **Avoid storing materials directly on the floor.** If shelf space is unavailable for them, use an alternate means of elevating boxes and books at least four inches off the floor. One option would be wooden or plastic palettes.

- **Flat file units should be placed on a steel base that raises them at least 4" off the floor.** As will be explained in Section III.A below, however, flat file units in the Town Hall vault are already stacked too high, and space limitations may not allow them to be shifted into lower stacks no more than two units high. The need to keep flat file units on a base should be taken into consideration in future planning.

- **Install water alarms in the Town Hall basement vault and attic, and in the two Town Clerk vaults in the Library.** Basements and attics are prone to water leaks, and particularly given that these storage areas are not often frequented, a water alarm should be installed to prevent a leak from going undetected for some time.

- **Public Library staff should continue to monitor water leaks.** It is commendable that they have been so attentive in monitoring this problem.

- **As recommended in Section II.C above, avoid leaving unbound materials in the open when they are not being worked with.** Returning them to protective enclosures will prevent or limit water damage in the event of a nearby water leak.

F. Emergency Preparedness

None of the five organizations covered in the assessment has an emergency preparedness plan for their historical records. The Public Library's Head of Technical Services trained in disaster recovery through an MBLC work shop approximately ten years ago. She is the only staff member that reported having participated in such training.

- **Each organization should prepare a disaster plan.** One overall plan can be prepared for the Town Hall and School Department, but if possible, one person from each department headquartered in the two buildings should be part of a "disaster team" that would be called on to respond in the event of an actual disaster. While it is unnecessary for each department to develop its own plan, each one should identify priority records for salvage. This would be useful in the event of a small-scale event that impacted only individual departments (e.g., a burst pipe). A building-wide priority salvage list should be prepared as well. The Public Library and Historical Society should each have their own plan.

    - **Consider using dPlan™, a free, online disaster planning tool developed by NEDCC and the Massachusetts Board of Library Commissioners (MBLC), available at www.dplan.org.** Using the tool, the person responsible will only need to provide information about personnel, the building and the collections; the tool will generate a complete plan.

- **In the long term, the Town Clerk, as well as representatives from each of Hingham's cultural heritage organizations, should work with the Town's Emergency Management Department to integrate historic records into the Town-wide disaster plan.** NEDCC, the Massachusetts Board of Library Commissioners, and the Massachusetts State Archives have developed a framework for coordinated, area-wide emergency response. For more information, see http://statewideplan.pbwiki.com/.

- **Each organization should prepare a small disaster response kit for water-damaged materials.** A complete list of supplies is included in the "Worksheet for Outlining a Disaster Plan" in *PLAM3*, and online at www.nedcc.org, as well as in dPlan™. As an alternative to assembling a kit, each

organization might consider purchasing a React-Pak, available from ProText (www.protext.net) as well as other suppliers. Although purchasing a prepared kit is more expensive than buying the supplies separately would be, the convenience may outweigh the extra expense.

- **It is strongly recommended that at least one staff member at each institution be trained in disaster response techniques for library and archival materials.** Training will help responders feel prepared in the event of an actual disaster, which would facilitate a more organized, efficient recovery process. The Town should consider applying for an NEH Preservation Assistance Grant for Smaller Institutions to fund this type of training. For more information, see http://www.neh.gov/grants/guidelines/pag.html.

G. Security

1. The Building

Town Hall & School Department

The Town Hall and School Department buildings are protected from unwanted intrusion by window locks. In addition, the Hingham Police Department is headquartered on the first level of the connector between the two buildings. Police officers are on the premises 24 hours a day, seven days a week, and the Town Clerk reported that they perform a check of the buildings during the midnight to 8:00 a.m. shift. At closing time each day, Town Hall staff check to see that all entrances and windows are secure and closed. These daily practices are excellent, and should continue.

Public Library

The Public Library is protected from unwanted intrusion by alarmed emergency exits, intrusion alarms on exterior doors, and motion detectors. Keys to the building are restricted to the Director, his Administrative Assistant, and three custodians. The Administrative Assistant keeps a master list of employees with keys.

Historical Society

Old Derby is protected from unwanted intrusion by window locks, alarmed emergency exits, intrusion alarms on exterior doors, and motion detectors. Keys to the building are held by the Executive Director, President, Vice President, Treasurer, and the annual intern.

2. The Collections

Town Clerk

The Town Clerk's records are stored in her office suite in the Town Hall, in the basement vault and attic of the Town Hall, and in two vaults on the lower level of the Public Library. The Town Clerk does not have direct access to the attic rooms where their records are stored, though: access must be requested from a member of the Building Department or Maintenance Department.

Beyond the Town Clerk's public service area, access to her office suite is limited to staff and a few other Town employees (e.g., Maintenance staff, the Fire Chief, etc.). Records in the office suite are stored in a room at the end of the central hallway; in a large closet; on open shelves in the central hallway; and in an open area with file and card cabinets across from the customer service counter. Only three or four people (including the Town Clerk) have the combination to the basement vault, which is appropriate. The oldest of the Town Clerk's records are stored in two vaults on the ground floor of the Public Library. Access to the vaults is strictly limited, with keys kept by the Library's Administrative Assistant. The Town Clerk's website states that vital records are "available for viewing or purchase by the general public," and that members of the public may "browse through…films, books, etc."

Historical Commission

The Town Hall attic also holds a significant portion of the Historical Commission's records. Like the Town Clerk, Historical Commission staff do not have direct access to the attic rooms, and must request access from a member of the Building Department or Maintenance Department. Other Historical Commission records can be found in the Commission Director's office, the door to which is kept closed when he is out, and in containers in the hallway immediately outside his office. Two banker's boxes of records, believed to have been stored in the Town Hall attic or basement vault, could not be located for the site visit. These records have not been made available to the general public.

School Department

Among all the historic records included in this assessment, the School Department's records are at the highest risk of theft, vandalism and accidental damage. They are stored on open shelves in a public meeting room, leaving them available for anybody to handle anytime the room is open. (Figure 8)

Figure 8.

Public Library

Library staff do not have the time to continuously monitor researchers working with the materials. Although access to Historical I and II is controlled as strictly as possible, Trustees may enter the rooms at

will, sometimes taking historical materials home. Donated materials sometimes "appear" in the rooms without a staff member having been notified. While this does not necessarily compromise security, it can have a negative impact on effective intellectual control, strategic use of space, and—perhaps most importantly—pest control, because donated materials may be infested with pests or mold, which could spread to the rest of the collection.

Historical I functions as the historical collection reading room, but lately it has also been used to hold miscellaneous materials, such as tax forms. The adjacent room, Historical II, functions as rare and archival collections storage. It is excellent that written regulations are in place to govern use of the historical materials and access to Historical I and II. They stipulate that access to Historical I is limited to local history and genealogy researchers, and that access to Historical II is limited to staff. They also state that researchers are required to present photo identification "with current address," and that the ID will be held until the researcher signs out of the room and a staff member has inspected the materials used. Coats and bags may not be taken into the reading room. Researchers may be limited to accessing one item at a time, and they are required to work in pencil. All of these guidelines are appropriate.

Historical Society

Archival materials are stored in an unlocked room on the third floor. Access to this room is obtained through an adjacent archives work room, which is kept locked when not in use. Collections are used in the presence of a staff member or volunteer at all times in the work room, which is excellent. The collections do not circulate to the public, but they can be signed out to board members and long-term volunteers. No written policies are in place governing use of the materials, but researchers are asked verbally to work in pencil, and food and drink are prohibited.

- **The Town Clerk and the Historical Commission should be given keys to the attic rooms where their records are stored.** It is unusual for individuals directly responsible for records preservation not to have first-hand access to those records. Moreover, impeded access to records promises to slow response time in the event of a disaster.

- **At least one other person—ideally, the Town Clerk—should hold keys to the two basement vaults in the Public Library.** An extra set of keys could be useful in the event of a disaster, allowing for faster response time if the Administrative Assistant were unavailable or if, for some reason, her keys could not be found.

- **Continue to limit the distribution of keys and vault combinations to as few people as possible.**

- **Rooms and vaults where historic records are stored should be checked at the end of each day to ensure that their lights are turned out and doors are locked.**

- **Move the records kept in the central hallway in the Town Clerk's office suite to more secure storage.** They could be moved to the records storage room at the end of the hall, or the open bookshelf could be replaced with a locking cabinet.

- **Avoid storing miscellaneous materials (e.g., tax forms) in rooms where historical records are stored or used.** Miscellaneous items can accumulate over time to produce clutter, which

compromises security (by obscuring surfaces and lines of sight to work tables). Clutter can also become a haven for pests, dirt and dust.

- **As recommended in Section I.C above, prepare an inventory of all historic records.** For the purposes of security, each organization needs to have an accurate list of the records under their care. As noted, for Town records, the Massachusetts Archives Records Management Unit can assist with inventories. For more information, contact Terry French, Senior Records and Information Manager, at (617) 727-2816, ext. 259, or by email at terry.french@sec.state.ma.us.

- **Each organization should establish written use policies.** For suggested policies, see, "Collections Security: Planning and Prevention for Libraries and Archives," preservation leaflet 3.12 in *PLAM3*, or online at www.nedcc.org.

- **Each organization should establish a means of registering researchers.** Researcher registration forms are the most common registration method in libraries and archives, but the Town Clerk's office may find it simpler to ask researchers to sign a log book. Every researcher should be required to register and to submit a photo ID to confirm their identity. For a sample registration form, see "Collections Security: Planning and Prevention for Libraries and Archives."

- **Keep a record of materials accessed by each researcher.** Call slips are the most common mechanism for recording and keeping track of this information in libraries and archives, but again, the Town Clerk's office may find it simplest to include this information in a log book. Either way, it is important to have a record of which materials have been used, and by whom.

- **Researchers should be supervised at all times, either by a staff member or a volunteer.** It may be necessary for researchers to schedule their visits for a time when a staff member or a volunteer is available to supervise them.

H. Pest Management & Housekeeping

Town Hall & School Department

The Town Clerk reported that evidence of pests has not been found in the Town Hall. In the past, rats believed to come from a neighboring street were seen around the outside of the building, but the Town Clerk reported that they were never seen inside. A pest control professional checks for pests inside and outside the building in spring and fall. Most areas of the Town Hall and School Department building are cleaned regularly by custodial staff; this excludes the records storage areas in the Town Hall attic. A small cafeteria is located on the second floor of the Town Hall; food and drink are consumed there, in the School Department's meeting room, and, it is assumed, in some offices.

Records storage rooms in the Town Clerk's office are relatively tidy. Neither shelves nor file cabinets are especially dusty, and the carpets in the Town Clerk's office are free of debris. The shelves and boxes in the basement vault are somewhat dusty, however. Volumes and shelves in the School Department are somewhat dusty.

Public Library
While food and drink are consumed in the Public Library's café area, staff kitchen, offices, and desks, they are expressly forbidden in Historical I or II. This restriction is included in the written regulations governing the use of Historical I, and it is appropriate. Areas of the Library where food and drink are consumed are inspected and cleaned daily. This work is supervised by the Head Custodian. Library staff have reported seeing silverfish and crickets in the building. This is worrisome because silverfish are attracted to starches and proteins, which are present in paper sizing, glues, pastes, and leather. Historical I and II are clean overall, if cluttered. Dust does not appear to be a problem.

Historical Society
Food and drink are not permitted in the archives storage or work rooms. Cleaning is performed on an as-needed basis. The staff has not seen evidence of pests in the building. Routine chemical extermination is not performed, which is good. The storage and work rooms are quite cluttered. The building has very little storage space, so these rooms are used to store miscellaneous items, such as cleaning equipment.

- **Supervised, annual cleaning of books, boxes and shelves should be scheduled and implemented to keep dust and dirt to a minimum, and as a means of pest prevention.** Cleaning books and shelves on an established schedule is important because dust and dirt attract insects and provide a substrate for mold growth. The person overseeing preservation at each institution should ensure that this gets done, and should train staff or volunteers who perform the cleaning. For more information, see NEDCC preservation leaflet 4.3, "Cleaning Books and Shelves," in PLAM3 or online at www.nedcc.org.

- **Avoid storing miscellaneous items (e.g., cleaning equipment, tax forms) in rooms where records are stored and used.** Cleaning equipment in particular can hold particulates that circulate into the storage environment and contribute to staining and abrasion of collections.

- **Each organization should develop an Integrated Pest Management program.** IPM is a pest management strategy that focuses on addressing and correcting causes of pest infestation rather than symptoms. It is a best-practice for cultural heritage institutions. IPM strategies include controlling pest habitats, identifying and sealing points of entry, and eliminating food sources to prevent infestation. Additional information about integrated pest management can be found in leaflet 3.11, "Integrated Pest Management," in *PLAM3* or online at www.nedcc.org. Another useful resource is the Massachusetts Department of Food and Agriculture's "Integrated Pest Management Kit for Building Managers," available at http://www.asthmaregionalcouncil.org/about/documents/IPMKitforBuildingManagers.pdf.

- **Using sticky traps, begin monitoring all records storage areas for any signs of insect infestation.** These will help determine the extent of any problem that does arise. Knowing which pests are entering the records storage areas will help the staff to determine effective preventive strategies. See "Integrated Pest Management," leaflet 3.11 in *PLAM3* for more information.

- **The presence of silverfish often indicates elevated humidity levels.** Lowering the relative humidity in the Library to a level below 50% will create a less inviting environment for these insects.

III. STORING & HANDLING LIBRARY & ARCHIVAL MATERIALS

A. Storage Furniture & Space

Town Hall & School Department

Nearly all of the storage furniture housing records in the Town Hall (including the Town Clerk's and Historical Commission's records) are made of baked enamel or powder-coated steel. The basement vault is quite crowded, and contains a number of records boxes flagged for disposal. (Figure 9) Flat file unit, also in the basement vault, are available for oversize materials, but they are stacked up to four high (around six feet or slightly more), which makes safe retrieval of items in the higher drawers difficult. The aisle width is too narrow for the flat file drawers to be opened wide enough to remove materials without risking damage to them.

School Department materials are stored on painted wood shelves. As explained in Section II.G above, these records will need to be moved to more secure storage; at that point, they should be placed on powder-coated steel shelving.

Figure 9.

Public Library

All shelving in Historical I and II is constructed of powder-coated steel. The shelves are adjustable and are 12 inches deep; unfortunately, they have backstops that prevent the placement of oversize volumes across the surface of two back-to-back units. Floor load limitations allow for a maximum shelf height of about five feet, and the ceilings in both rooms have a dropped portion down the middle, preventing the Library from making use of vertical space to increase available shelving. Insufficient shelf space prevents oversize volumes from being stored properly. Historical II, which holds archives and rare books, is especially crowded. Some shelf space there is taken up by historical materials of which the Library does not have ownership (i.e., records belonging to the Cemetery Committee). The only wooden storage furniture is a flat file unit, which is used to hold maps. Baked enamel records center shelving holds

Town records in the larger of the two ground-level vaults. One records center unit and a metal file cabinet stored inside a safe hold Town records in the smaller of the two vaults.

Historical Society

The majority of the Historical Society's collections are stored on baked enamel records center shelving. This is fine for storing archival boxes and oversize books, but it is not appropriate for non-oversize books because it lacks endcaps (which prevent books from falling off the shelf). Wooden shelving is used for some books and for photographs. The main shelving unit holding photographic materials is too narrow to support most of the boxes completely, and even though it is positioned against a partial wall, it is unanchored, and could tip over relatively easily. (Figure 10) There is one metal flat file unit for oversize materials, and it is quite full. A rack is used to store framed materials, which is excellent. All storage furniture is either reaching capacity or at it; consequently, materials are stored on tables or on the floor. The Executive Director is aware of this problem, and is working with the Old Derby Advisory Committee to "re-vision the current storage space." An engineering study is planned to determine the floor load capacity for the archives storage room, and the Executive Director has begun working with shelving vendors to develop rough estimates for the cost of new shelving. She also plans to purchase an additional flat file unit.

Figure 10.

- **As recommended in Section I.C above, evaluate all municipal records for retention.** Disposal of inactive records should free up some storage space.

- **Additional flat file units are needed to store engineering plans and other oversize documents in the Town Hall.** Take into consideration, though, that there are likely to be duplicates of maps and

engineering plans, which could be weeded from the collection. The extent of the duplicates cannot be known until these records are inventoried.

- **The Public Library should either seek ownership of the Cemetery Committee records stored in Historical I, or else work with the Cemetery Committee to find another space to store these materials.**

- **Since its shelving ranges allow for adjustable shelves, the Public Library might consider purchasing additional shelves, without backstops, to add to one or two units in order to properly shelve oversize volumes.**

- **Eventually, the Public Library should replace the wooden flat file unit with one made from powder-coated steel.** Wood emits acidic gases as it deteriorates. Paper-based materials stored in wooden drawers or on wooden shelves deteriorate more quickly because they absorb off-gassed chemicals.

- **The Historical Society should replace the shelving unit holding photographic materials as soon as possible.** As noted, this unit is unstable, and if it tipped over, the materials stored on it—which include glass-plate negatives—could be damaged.

- **As planned, in the long term the Historical Society should expand shelving for its collections.** One or two additional flat file units are needed. Records center shelving can continue to be used for boxed storage if necessary, but powder-coated steel shelving with end caps should be installed for proper storage of bound materials.

- **As recommended above in Section II.A, the Town should plan long-term to expand the amount of storage space available for all historic Town records.** The space should be designed to accommodate existing records as well as future growth, and it should be secure, with year-round climate control and a fire suppression system.

B. Handling Practices

None of the organizations assessed had comprehensive, written policies for handling historical materials. In its collection management policy for its Historical Collection, the Public Library prohibits users from tracing materials, and stipulates that "photocopying is at the discretion of the staff." This is appropriate, but the guidelines need to be expanded. Only the Historical Society regularly instructs users in proper handling techniques. The Executive Director and Archivist have both been trained in collections handling, and they in turn train volunteers working with the collections as needed. A pen was found in between papers inside one folder of the School Department's records. (Figure 11) Some attention should be given to handling of collections during processing. At the Historical Society, various materials had been left out on tables, unprotected, which leaves them vulnerable to damage from water and particulates, and exposes them to light. (See Section III.C and Figure 4 above.)

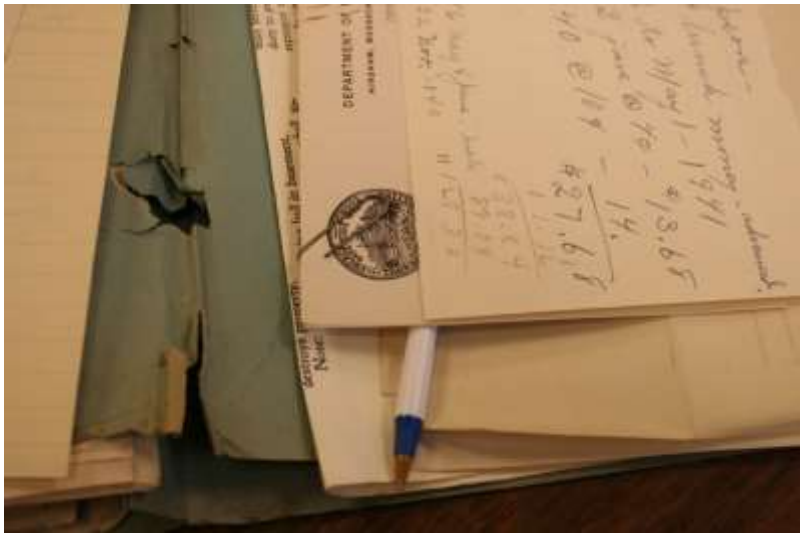

Figure 11.

- **Each organization should prepare a list of guidelines for proper handling of records.** Incorporate these guidelines into the collection management policy to help ensure that they remain in place over time. The guidelines should be distributed to all departments that manage public records, and all employees that handle these materials should be familiar with them.

    - **A version of the handling guidelines should also be made available to researchers.** Some repositories ask researchers to read and then sign a copy of the policy upon registration. Others place "table tents" with this information on work tables.

- **Training in proper handling techniques for archival materials would be extremely useful to Town employees and Library staff who handle or provide public access to historic records.** This could be accomplished in one or two half-day workshops.

C. Storing Bound Materials

1. Books

Town Clerk

Books under the care of the Town Clerk are stored in the room at the end of the hallway in her office suite; in the Town Hall basement and in the two Public Library vaults; and in the attic. In the office suite room, books are shelved upright and supported fully by their shelves, but they are pushed to the back of their shelving units, which provides no room for air to circulate around them (instrumental in preventing mold in the event of an HVAC system failure). In the Town Hall vault, books are shelved upright, leaning, and flat, and in some cases they are positioned only an inch or two away from—or even touching—the ceiling. (See Figure 5, above) Other books are stored upright in two rows on top of one another, or

stacked on top of one another in open cardboard file drawers that sit on the shelves. In the smaller of the two Library vaults, the oldest Town records are stored in stacks in a file cabinet inside a safe. (Figure 12) In the larger of the two vaults, oversize volumes are stacked many high. Some volumes are shored on their fore edge, and as a result, a few have become curved. (Figure 13) Many volumes are leaning, and a few stick out past the shelf edge. The bindings on a number of volumes are abraded. The oldest Town records are in fair to poor condition, with loose and abraded covers and torn pages. (Figures 14, 15)

Figure 12.

Figure 13.

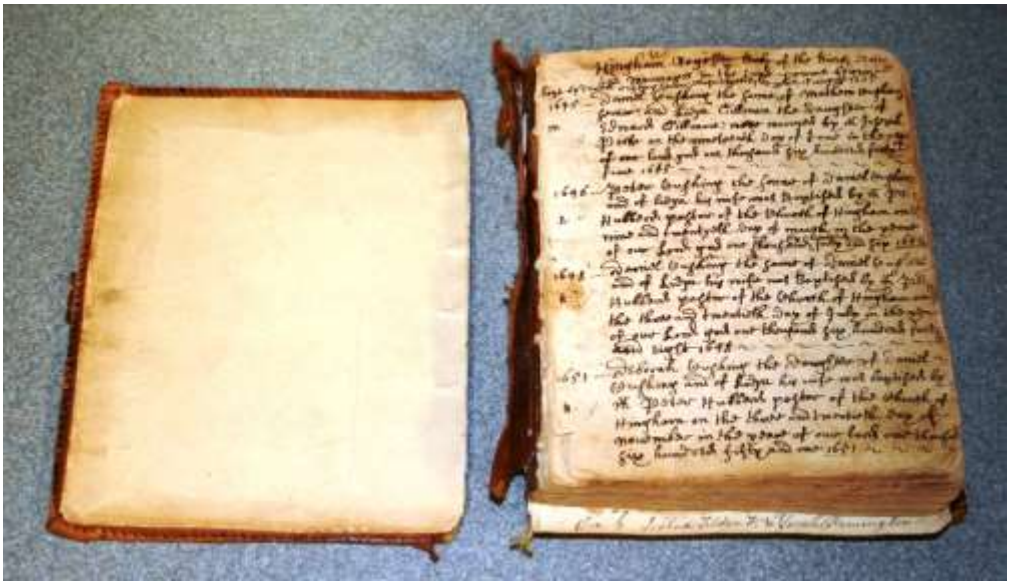

Figure 14.

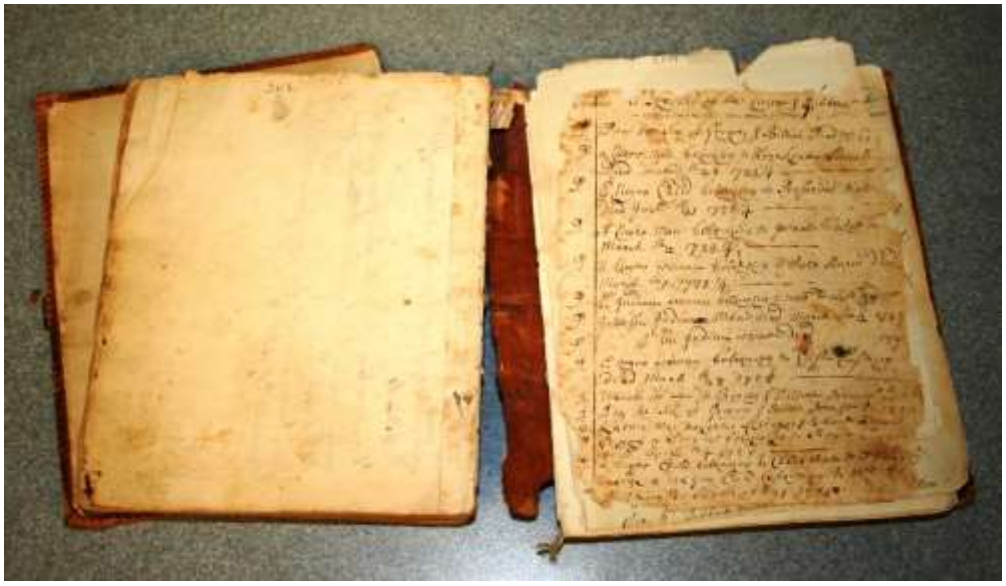

Figure 15.

Historical Commission

The vast majority of the Historical Commission's records consist of unbound materials. Books include a dozen or so late 20th century, slender ledger books stacked in a banker's box. These materials are in good condition, but need to be shelved properly to remain that way long-term.

School Department

Bound volumes among the School Department's materials include bound annual reports and meeting minutes, and account ledgers. Non-oversize volumes are stored upright, but because they are not adequately supported, they lean slightly. Oversize volumes are shelved flat in stacks ranging from two to eight volumes high. Most of the bound volumes have old, yellowing adhesive labels affixed to their spines. In some volumes, the paper has turned yellow, which is an indicator of acidity. Some bindings have torn headcaps, loose spines, peeling leather, and/or abrasion. School reports dating from 1873 to 1939 were library bound a number of years ago. The earliest volume, dating 1873 to 1890, has a couple of reports at the front that have become brittle and are pulling away from their sewing. (Figure 16)

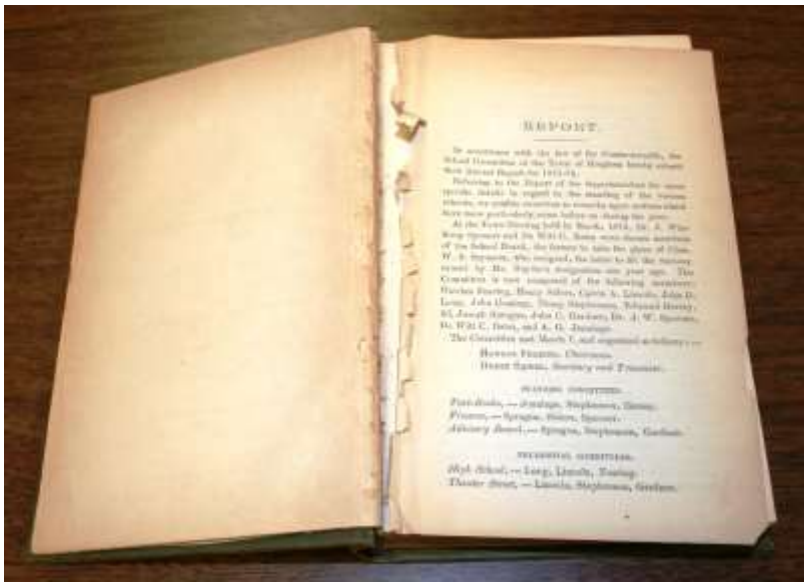

Figure 16.

Public Library

The Public Library holds 1,889 rare books, many of which would benefit from protective enclosure in phase boxes. A significant percentage have some type of damage, including torn headcaps, torn and cracked spines, covers that have separated from the spine, loose covers, red rot, and abrasion. (Figure 17) The Head of Technical Services performs some repairs, such as recasing, on materials in Historical I. A few damaged volumes are tied together for support with undyed cloth tape, which is good. A few volumes had paper clips attached to pages, which had created indentations. (Figure 18) Almost all the volumes in Historical I, and some of the volumes in Historical II, have adhesive labels on their spines. Some volumes in Historical II have had their call numbers written in pencil on an acid-free paper flag, which also holds a bar code sticker. This approach to labeling is ideal. Shelving is generally good, though several rows of books in Historical II are tilting. The shelves have wire bookends attached to the backstops. A few bound volumes are stored on their spine in folders in file cabinet drawers, with pamphlets and unbound manuscripts. This does not provide them with the support needed to prevent distortion of the binding, and the volumes themselves can crush or tear adjacent papers.

Oversize volumes are stored on foredge or in stacks between two and seven volumes high. The Head of Technical Services tries to discourage shelving on fore edge, though this directive—which is appropriate—is not always followed. Oversize volumes are best stored flat in stacks no more than two or three volumes high (depending on their weight), but insufficient shelf space likely makes this impossible.

Figure 17.

Figure 18.

Historical Society

The Historical Society holds more than 400 bound volumes, and it does not have sufficient shelf space to store them properly. While some are shelved upright, many volumes are stored in stacks as many as 13 volumes high. (Figure 19) Many volumes have some type of damage, including crumbling or abraded leather; stained, loose, or missing covers; and frayed pages. Volumes belonging to archival collections are housed in metal-edge boxes. Slender volumes are housed on their spine in acid-free folders and flip-top document boxes. Bulkier volumes, in general, are housed flat in oversize boxes.

Figure 19.

- **Improve stacks maintenance.** Proper shelving is one of the best and least-expensive means of extending the useful life of collections. Ensure that non-oversize volumes are shelved upright and not leaning, using non-knifing bookends for support. Any oversize volumes shelved on their fore edge should be turned onto their spine if they cannot be shelved flat. Ongoing shelf maintenance will ensure that books retain their shape.

    - **For an example of a "non-knifing" bookend, see item number WW-168-3-01 from Gaylord (www.gaylord.com).**

- **Shelf-attached bookends should be replaced, as they often do not provide uniform support, and can form indentations in book covers.**

- **Increase the shelf space available to store oversize volumes horizontally.** This is needed in the Town Hall, Public Library, and Historical Society. Oversize volumes are best shelved in stacks no more than two or three volumes high.

- **Place damaged, especially fragile, and unique volumes in phase boxes to provide them with support as well as protection from light, dust and water.** NEDCC's book conservators highly recommend CMI Micro-Climate™ boxes. They are available for around $7.00 each through Custom Manufacturing, Inc. (www.archivalboxes.com).

    - **Volumes with "red rot" should have high priority for protective enclosure in order to contain particulates, and prevent them from affecting nearby materials.**

- **Transfer hard-cover volumes stored in file cabinet drawers and bankers boxes to shelves.** Upright shelving helps regularly-sized volumes retain their shape.

- **Remove metal fasteners from volumes in the Public Library (Historical II).** They are causing indentations, and could cause tearing.

- **The oldest Town records volumes (those stored in the smaller of the two Public Library vaults) are excellent candidates for professional conservation treatment.** See Section IV.C below for further information.

2. Pamphlets & Booklets

Town Clerk
Town report booklets can be found in the back room of the Town Clerk's office suite and in the large Public Library vault. In the back room, Town reports are stacked on top of a cabinet, and are not in any type of enclosure; and stacked and upright on a metal shelf. In the vault, they are shelved upright but leaning, and some are quite frayed.

Historical Commission
The Historical Commission's records included a minimal number of pamphlets. These are stored with document and manuscript materials in a folder stored flat in a file cabinet in the attic.

School Department
Pamphlets and booklets in the School Department's records include School Committee reports and Secondary School Programs of Study. School Committee reports are stored upright in old cardboard magazine/pamphlet boxes that are crumbling and likely acidic. Because these boxes are open at the back, it would be easy for items to fall out when the box is removed from the shelf, an event that would almost certainly damage these brittle materials. A few of the pamphlets dating from the last half of the 19th century are brittle, and quite fragile.

Public Library
Pamphlets and booklets are shelved individually or in small groups in between regular bound volumes. In one instance, a comb-bound booklet shelved between two heavy, leather-bound volumes had slipped underneath one of the volumes, and as a result had become bent and stained with red rot. (Figure 20) In the Bicentennial Collection, pamphlets and booklets are stored in folders with unbound documents, separated from the documents by interleaving. They are also stored in groups in magazine files. Many pamphlets are quite damaged or brittle. Pamphlets in the Richardson 1980 collection are housed well, individually in custom wrappers made in-house from heavy acid-free paper.

Figure 20.

Historical Society

For the most part, pamphlets and booklets in collections that have been processed are stored on their spines in acid-free folders and boxes, or in acid-free envelopes in flip-top pamphlet boxes. A number of pamphlets and booklets are not housed, though, and are stored in tall stacks on shelves. (Figure 21)

Figure 21.

- **Transfer groups of pamphlets/booklets that are roughly the same size (e.g., unbound Town reports) to flip-top pamphlet boxes.** See, for example, item number JD-H7104 from Gaylord.

- **More delicate pamphlets (such as those at the Historical Society) that are not currently housed should be housed on their spine in acid-free, lignin-free, buffered folders and flip-top document boxes.**

- **Individual pamphlets or booklets that need to be shelved upright should be placed in document preservation binders to prevent them from being crushed by larger, adjacent volumes.** Document preservation binders consist of a four-flap enclosure attached to boards. A four-flap enclosure allows the item to be lifted gently out of its housing. Item number 324-9115 and item number 324-91152 from University Products (www.archivalsuppliers.com) are examples of appropriate enclosures.

- **It is acceptable to house pamphlets in boxes or file cabinets with unbound documents (as at the Public Library), but they should be transferred to a separate folder to prevent damage to adjacent documents (which can slip under heavier items and become crushed or torn).**

D. Storing Unbound Materials

1. Documents & Manuscripts

Town Clerk

Unbound documents under the care of the Town Clerk reside in several locations. These include a "middle room" in the Town Clerk's office suite, the open area across from the customer service counter, the Town Hall vault, the attic, and the larger of the two Public Library vaults. Most documents are housed in file folders of unknown quality, and then within file cabinet drawers, banker's boxes, conventional cardboard boxes, or cardboard file drawers on shelves. The Town Hall vault contains folders of documents stacked on top of boxes, and the larger vault at the Public Library contains documents in folders in tall stacks on shelves. Stored this way, they are unprotected from water, accumulate dust and debris over time, and are difficult to search. Remaining documents are housed in ring binders, or folded and tied into bundles stored in wood boxes. (Figures 22, 23) Some documents stored in binders have torn away from the binder rings. Many folders are too full, and as a result have frayed, torn, or creased edges. (Figure 24) Some file drawers are over-full as well. Metal fasteners are used throughout, and rubber bands are used occasionally to hold groups of documents together. Loose certificates (e.g., Deeds and Probate Records) are stored in small file drawers that fit their dimensions.

Figure 22.

Figure 23.

Figure 24.

Historical Commission

The Historical Commission's unbound documents are stored in boxes on the floor outside the Director's office; in a lateral file cabinet in the Director's office; and in two file cabinets in the attic. Most items are housed in file folders, some of which are colored (e.g., Historic District Commission files in the Director's office). Metal fasteners are used throughout.

School Department

Unbound School Department records include a typed annual report, Miscellaneous Parent-Teacher Association documents, Student Enrollment charts, and School Committee Meeting Minutes. All items need to be transferred to chemically stable folders and boxes that provide them with the physical support to prevent damage. Parent-Teacher Association records, for example, are crowded into two folders stored flat in an older magazine file. Many of these documents are brittle, a few to the point of crumbling, and are fastened together with rusted paper clips. (Figure 25) School Budgets are fastened with clips into old report folders, as are most of the School Improvement Proposals. These materials should be removed from the clip folders before being transferred to archival folders and document boxes. Metal fasteners are used throughout.

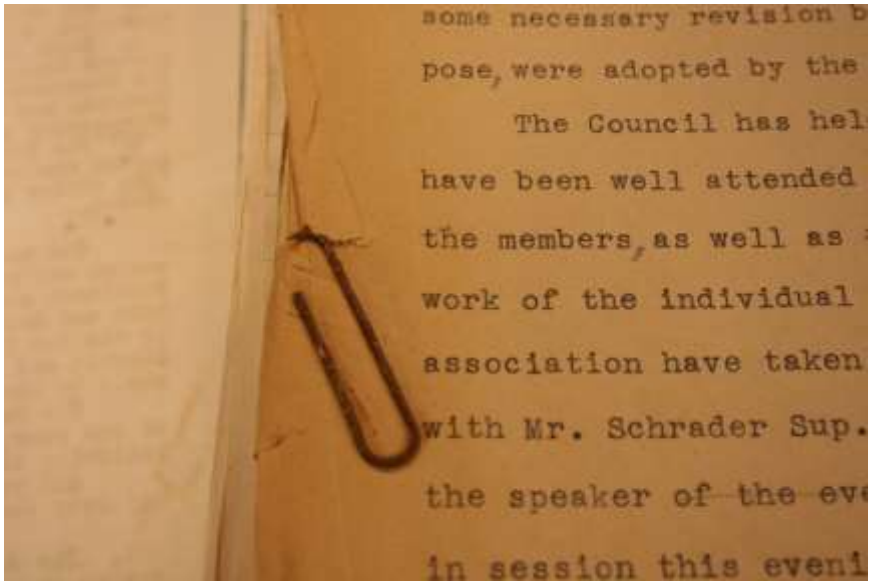

Figure 25.

Public Library

Documents and manuscripts reside in Historical II. The Bicentennial Collection is stored in conventional-quality folders and hanging files in a file cabinet. Items are interleaved, and in some instances they are stored in the same folder with pamphlets and bound volumes (this is addressed in Sections III.C.1 and III.C.2 above). Several collections (e.g., Hingham Public Library c. 1872-1935) are housed in old manuscript boxes shelved on edge. The boxes are not made from chemically stable materials, and the papers they house are not stored in folders, rendering them difficult to remove without damaging them. (Figure 26) Other documents and manuscripts are stacked on a shelf in old envelopes or folders, on top of boxes in polyester L-sleeves, or are unenclosed. One group of manuscripts ("Manuscripts for Two

Hundred Years in South Hingham") is housed in an archival box, but the items have not been placed in folders, and slump inside the box. (Figure 27) The Richardson 1980 collection contains numerous handwritten and printed documents and small certificates. They are housed upright in archival boxes, which is appropriate, and placed individually in polyester L-sleeves.

Figure 26.

Figure 27.

Historical Society

Housing of documents and manuscripts at the Historical Society, comprising approximately 45 linear feet, is excellent overall. Acid-free folders and flip-top metal-edge document boxes are used. Folders are not generally overfull, and fragile or damaged items are housed in their own folders within a box. Spacer boards are used to keep folders upright in partially full boxes, and folders are labeled in pencil. Only a couple of problems were observed. One box contained what appeared to be a wooden mousetrap on top of bundles of documents in folders. (Figure 28) Another box contained a thick book, housed in the middle of the box between folders with documents and manuscripts. The book was heavy enough that it leaned on the adjacent folders. This may have been more damaging for the book, which was misshapen, but to prevent damage to any materials, bulky items are best stored separately from unbound materials.

Figure 28.

One of the Historical Society's largest collections of documents is the Julian Loring Collection, consisting of 46 linear feet of research notes on Hingham's historic structures, with accompanying photographs. (Figure 29) The notes and photographs are housed in ring binders, most of which are stored in cardboard boxes on the floor. A few have been placed on a metal shelf. Because there are so many notebooks, rehousing these materials would constitute a major effort. If the value of the materials merits it, however, such a project would be worthwhile, and grant funding could be pursued for the necessary supplies.

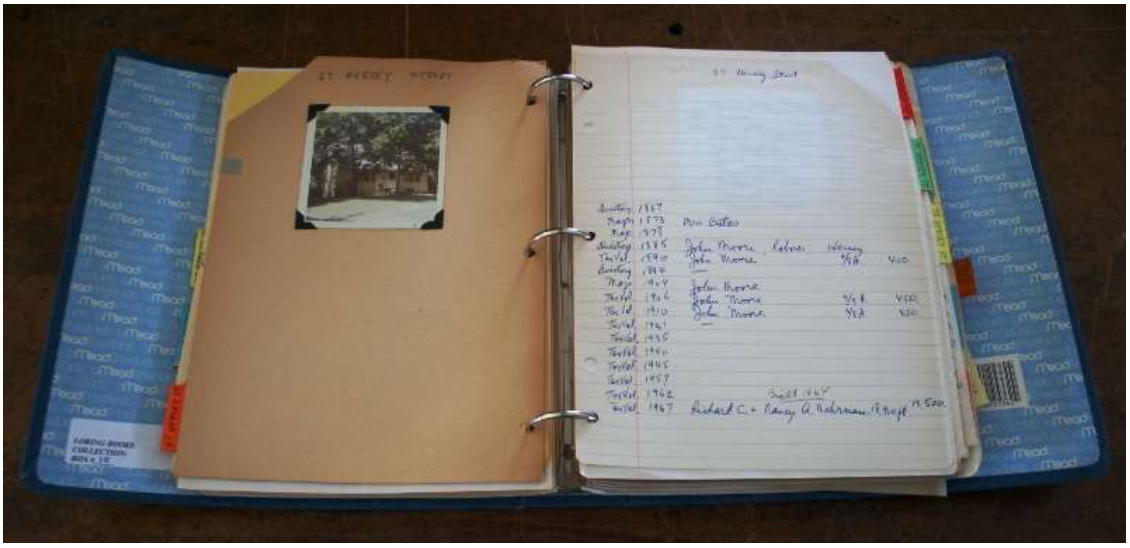

Figure 29.

- **Unbound documents and manuscripts that are not currently housed, or that are housed in ring binders or other damaging enclosures as described, should be transferred to acid-free, lignin-free, buffered folders and records storage boxes or flip-top document cases.** It is acceptable to house documents and manuscripts in file cabinet drawers, but optimally they would be stored in folders and boxes, where they would be subjected to less movement.

    - **If time constraints make it impossible to replace old folders immediately, initial efforts should focus on placing unbound materials in boxes to prevent loss due to disorganization or exposure to water (in the event of a water leak).**

- E**nsure that folders are situated upright, and do not slump.** Use spacer boards to keep folders upright in partially-full boxes. See, for example, item number KB-EFCB821 from Gaylord (www.gaylord.com).

- **Alleviate overcrowding in boxes, folders, and file cabinet drawers to ensure that items remain in good condition (or to deter further damage).**

- **Replace colored folders (e.g., in the Historical Commission's files) with acid-free, lignin-free, buffered ones.** The dyes used in the colored folders could run if they became wet in a water emergency, and stain the enclosed documents. Because these folders house photographic prints as well as documents, replacement folders should have passed the Photographic Activity Test (PAT), described in Section III.D.3 below.

- **Remove rubber bands and metal fasteners.** Removing metal fasteners is imperative if they are found on documents that are especially fragile, or have already caused staining or tearing (as with the School Department records described above). In most other instances, though, removing metal

fasteners should not be a high priority, because it is time-consuming, and time could be better spent caring for the Town's historic records in the aggregate. For information about the proper removal of staples and other fasteners, see NEDCC preservation leaflet 7.8, "Removal of Damaging Fasteners from Historic Documents," available at www.nedcc.org.

- **Where objects (as at the Historical Society) need to be housed in the same box with unbound papers, separate the two types of materials by creating a "well" for the object at the back of the box with a spacer board.** See, for example, item number KB-EFCB821 from Gaylord (www.gaylord.com).

- **Note that while housing items in polyester sleeves is necessary when items are fragile or damaged, it doubles the storage space required to house the materials, and is not generally necessary for items in good condition.**

2. Oversize & Framed Materials

Town Clerk

Unbound oversize materials under the care of the Town Clerk reside in the Town Hall vault and the larger of the two Public Library vaults. They include various maps and engineering plans. In the Town Hall vault, many items are stored in flat file drawers, which is good. They are not in folders, however, which would allow them to be identified more easily and would protect them during handling. Remaining oversize materials in the Town Hall vault are housed in roll boxes stored on end in cardboard boxes on the floor. (Figure 30) In the Public Library vault, items are rolled up and stored on shelves, either unhoused or in open tubes. The Town Clerk's records did not appear to contain any framed materials.

Figure 30.

Historical Commission

The Historical Commission holds an abundance of maps and plans. (Figures 31, 32; see also Figure 2 above) Items are rolled or folded, and housed in cardboard boxes on the floor in the attic; in a cardboard box on a shelf in the Town Hall vault; in metal and cardboard file cabinet drawers in the attic. Some items are stored on the floor of the attic. The Historical Commission's records did not appear to contain any framed materials.

Figure 31.

Figure 32.

School Department

Only a couple of unbound oversize items can be found among the School Department's materials. These include broadsides, which are yellowing and stored on a shelf in the conference room.

Public Library

Unbound oversize materials at the Public Library include posters, maps, and manuscripts. Most of these items are stored in 15 flat file drawers, and many have been encapsulated. A few items are stored on top of the flat file unit, where they are exposed to light from the nearby interior window. A group of rolled school maps is stored on top of a box immediately beside the window. For lack of anyplace else to store them, framed items are stored on the floor, leaning against a wall or a shelf.

Historical Society
Oversize materials at the Historical Society include approximately 100 maps, 50 posters, and 150 works of art on paper. They are stored in metal flat file drawers that are quite full, and only a few items are housed in folders. As noted in Section III.A above, the Executive Director is planning to purchase an additional flat file unit. Some of the collection's framed materials are stored on a storage rack with dividers, which is excellent, but there is not enough space on the rack for all framed items, so overflow materials are stored on the floor, leaning against a wall.

- **A great deal of additional storage furniture is needed to properly store the Town's substantial collection of maps, plans, and other unbound oversize materials.** It is difficult to see how this can be implemented until the storage space for Town records has been expanded, but the Town should bear this need in mind as it develops a long-range preservation plan for its historic records.

    - **In the meantime, any maps, plans, or other unbound oversize items stored on the floor should be raised off the floor to guard against water damage.** As recommended in Section III.E, wooden or plastic palettes could be used for this purpose.

- **To the extent that drawer space allows, the Public Library should transfer oversize items not already in boxes or drawers to flat file drawers.**

- **Oversize items in flat file drawers need to be housed in folders to protect them from wear when the drawers are opened and closed, and to allow them to be identified more easily and handled more gently.** Where drawers are already crowded, though, this is not very practicable, because adding folders would create additional bulk.

- **In the long term, the Historical Society should acquire an additional storage rack for framed materials.**

    - **In the meantime, it should place framed items on padded blocks at least 4" high to raise them off the floor.** Padded blocks can be made in-house; see Canadian Conservation Institute, "Making Padded Blocks," *CCI Notes* 10/2 (available at www.cci-icc.gc.ca/) for instructions. Try to avoid leaning framed items against shelves holding other materials as well as exterior walls.

    - **The Public Library should also raise framed items off the floor by placing them on padded blocks.**

3. Photographic Materials

Town Clerk
The Town Clerk's records did not appear to contain photographic materials.

Historical Commission
Color and black-and-white photographic prints can be found throughout the Historical Commission's materials. They are generally housed in colored file folders with unbound documents. As

recommended above, colored file folders should be replaced with uncolored ones that are acid-free, lignin-free, and buffered, and that have passed the Photographic Activity Test (PAT).

School Department

The School Department's materials contain a photograph of the Hingham High School Class of 1929. It is yellowing, torn at one corner, rolled up, and stored on a shelf in the conference room.

Public Library

Historical II houses approximately 50 photographic prints, 300 glass plate negatives, and an unknown number of slides. One group of prints is stored in a Ziploc bag placed beneath a framed photograph on a shelf in front of an interior window. (Figure x) The glass plate negatives are stored in stacks inside five cardboard boxes. Slides are still housed in their developer's boxes. The Richardson 1980 collection contains a few prints, which are stored appropriately in folders and an archival box. A few prints can be found in envelopes on shelves.

Historical Society

A significant portion of the photographic collection, which includes approximately 1300 prints, and an unknown number of glass plate negatives, film negatives, and stereoviews, has been housed in protective enclosures. Most items have been housed individually in acid-free paper sleeves, and then placed upright in archival boxes. As noted in Section III.A above, the main shelving unit holding photographic materials is too narrow to support most of the boxes completely, and because it is unanchored, it could tip over relatively easily. Among the photographic materials in housing, the one recurring problem was a lack of support within the boxes housing photographs upright. Many of these boxes were only partially full, and their contents leaned to varying degrees, placing stress on the materials that can lead to damage. This is perhaps especially true in the case of glass plate negatives. One other problem appeared in the boxes of oversize photographs examined. Items were housed individually in acid-free paper sleeves, which is excellent, but the metal-edge box holding them was much larger than the sleeves. This allows the items to shift back and forth when the box is moved. There are a number of photographic items that remain to be housed, which are presently stored in the open on tables. (Figure 33) These include mostly prints, but a few cased photographs (e.g., daguerreotypes) were observed as well.

Figure 32.

- **Transfer prints housed in Ziploc bags or conventional envelopes (as at the Public Library), or in the open (as at the Historical Society), to individual acid-free, lignin-free folders and drop-spine or flip-top boxes.** Note that while folders with an alkaline buffer can be used with black-and-white prints, they are not recommended for color prints.

- **Rehouse glass plate negatives in four-flap enclosures and acid-free, lignin-free storage boxes.** Conservation Resources International (www.conservationresources.com) offers glass plate storage boxes with built-in supports; see, for example, item number 57MC4F-MC. Glass plate negatives should be kept upright to prevent them from cracking under stress. To reduce the risk of breakage during handling, store boxes no more than chest-high so that the person removing them from the shelf has good control and can handle them carefully.

- **Transfer slides to polyester slide pages and store the slide pages in a three-ring binder box.** See, for example, item number JD-PPBA from Gaylord (www.gaylord.com). Avoid using vinyl binders, because vinyl is chemically unstable, and will off-gas chemicals that harm collections.

- **Transfer daguerreotypes (and other cased photographs) to four-flap enclosures, and then house them vertically inside an archival box.** Alternatively, they can be stored flat in an archival box with a foam insert cut to fit the case. Foam inserts can be created in-house using chemically stable foam. One example is Plastazote polyethylene foam, item number KB-57187 from Gaylord. Suppliers such as Gaylord can also custom make foam inserts.

- **Use spacer boards in partially-full boxes to keep photographs upright.**

- **Ensure that all enclosures for photographs have passed the Photographic Activity Test (PAT).** The PAT (ISO Standard 14523) determines whether a product contains properties that will react with

photographic images to cause deterioration. Product descriptions in library and archival supplier catalogs such as Gaylord, University Products and Light Impressions will indicate whether an item has passed the PAT.

4. Scrapbooks, Photo Albums & Ephemera

Town Clerk
The Town Clerk's records did not appear to contain scrapbooks, photo albums, or ephemeral items.

Historical Commission
The Historical Commission's records did not appear to contain scrapbooks, photo albums, or ephemeral items.

School Department
The School Department's records did not appear to contain scrapbooks, photo albums, or ephemeral items.

Public Library
Historical II holds a few scrapbooks and numerous postcards. The scrapbooks are stored flat on shelves, and are in poor condition, with crumbling support pages, and tapes or glues that have lost their adhesive properties in some instances. Postcards are tied into a bundle and stacked on a shelf, as well as housed in a shoebox; some of the postcards in the shoebox are enclosed in older plastic sleeves of unknown quality.

Historical Society
The Historical Society holds a few 19th century photo albums. Only one album viewed had been placed in any type of housing (a drop-front archival box).

- **Place scrapbooks and photo albums in individual boxes that fit their dimensions as closely as possible.** Boxes can be either standard-size or custom-made. They should be constructed of acid-free, lignin-free, buffered boards.

- **Scrapbooks should be assessed to determine, on a case-by-case basis, whether they should be reformatted.** See Section IV.A below for more information and additional recommendations for reformatting.

- **Transfer postcards to acid-free, lignin-free, buffered boxes designed to hold postcards.** See, for example, item number 51097 from Gaylord (www.gaylord.com). Note that spacer boards should be used to keep postcards upright in partially-full boxes. Postcards that are housed in plastic sleeves of unknown quality should be removed from those sleeves prior to rehousing.

5. Newsprint

Town Clerk
The Town Clerk's records did not appear to include newsprint.

Historical Commission
The Historical Commission's files are interspersed with newspaper clippings. Some are loose within folders, while others are pasted or taped onto paper supports.

School Department
The School Department's records did not include newsprint.

Public Library
The Bicentennial Collection contains some newspaper clippings. They are interleaved between documents and pamphlets stored in conventional-quality file folders in a file cabinet in Historical II.

Historical Society
The Historical Society holds a number of unbound newspaper issues. These are stored flat in acid-free, metal-edge boxes, as appropriate.

- **Photocopy newspaper clippings onto acid-free, lignin-free, buffered paper, then discard the clippings.** If the clippings are to be retained, they should be separated from the photocopy, either by being placed in a polyester folder or by placing a piece of buffered paper between the clipping and the copy. Acid from the clipping will migrate to the acid-free copy if the two are not separated.

6. Audiovisual Materials

Town Clerk
Several small boxes of microcassettes are stored in the Town Hall vault. Each item is housed in its manufacturer's case, and labeled.

Historical Commission
The Historical Commission's records did not appear to include audiovisual materials.

School Department
The School Department's records did not include audiovisual materials.

Public Library
Historical II contains a few audio and video cassettes. They are housed in conventional plastic cases stored on end on a shelf, or on end in an archival box.

Historical Society
Audiovisual materials in the Historical Society's collections include approximately 50 audio and video cassettes and CDs. The Historical Society acquires oral histories on CDs and video cassettes from a volunteer group, so this part of the collection grows dependably from year to year. Most items are

housed in their manufacturers' sleeves or cases, and then in an acid-free, metal-edge box. A few audio cassettes observed were housed in what appeared to be polypropylene (i.e., chemically stable) cases.

- **Create a preservation copy and at least one use copy of each original recording and store them separately from the masters to prevent total loss of information in the event of a disaster.**

- **Plan to transfer recordings to more stable formats periodically.** Recordings should be transferred to an affordable, current, widely-supported format that offers the lowest level of compression. Transfers from tape should take place approximately every 10 years, while transfers from CD should take place approximately every five years.

E. Exhibition

Of the institutions covered in this assessment, only the Public Library and Historical Society exhibit their collections. The Library's Dwiggins Collection is on permanent display in a locked wood and glass case in the Library lobby. Materials are loaned "rarely," and then only at the Library Director's discretion. There are no written policies covering loans or exhibits.

Although no materials were on exhibit at the time of the site visit to the Historical Society, the Historical Society Director is considering turning a large function room on the second floor into an exhibit room. To this end, she is exploring the possibility of installing Mecho-Shades on windows in that room. The Historical Society does loan special and valuable materials; basic loan policies are outlined in the institutional collection management policy, but are implemented on a case-by-case basis. Per the loan policy, outgoing loans must be approved by the Society's Collections Committee.

- **Avoid placing rare or unique materials on permanent exhibit.** Even minimal exposure to light will damage materials, even if it is at first imperceptible.

- **As much as possible, display copies of materials in place of originals.** For documents and photographs, photographic reproductions or color copies should always be made for exhibition purposes. Light damage will occur even under low light levels, even though the damage is at first imperceptible.

- **In developing comprehensive written collection management policies, the Public Library should create specific policies for loans and exhibits.**

    - **The loan policy** should cover procedures for requesting a loan; and it should outline specifications for environmental conditions (including temperature, RH, and light levels); fire protection; security; insurance; transportation; and handling.

    - **The exhibition policy** should include guidelines for exhibit duration; selection criteria, including the person responsible; condition limitations; specifications for environmental conditions; security for exhibit cases and space; and use of appropriate mounts.

- **The Historical Society should develop an exhibition policy, and it should flesh out its policy on outgoing loans to include specifications for environmental conditions (including temperature, RH, and light levels); fire protection; security; and use of appropriate mounts.**

IV. REFORMATTING & CONSERVATION TREATMENT

A. Microfilming, Preservation Photocopying & Digitization

Town Clerk
Various Town records are available on microfiche, including vital records to 1900, cemetery records from 1600 to 1989, and records from St. Paul's Cemetery. They are stored in the back records storage room in the Town Clerk's office suite, where a microfiche reader is also available. The smaller vault in the Public Library holds several boxes of microfilm negatives, including one labeled "Town Records." It is not known which Town records this reel encompasses. A complete inventory of Town records available on fiche or film does not seem to be available.

Historical Commission
None of the Historical Commission's records have been reformatted. As noted in Section III.D.5 above, the Commission's files contain some newspaper clippings, which would benefit from preservation photocopying.

School Department
It is not known whether any of the School Department's records have been microfilmed. Many of the Department's unbound materials are yellowing and brittle. These materials should have high priority for reformatting because the Town risks losing the information they contain if the records deteriorate much further.

Public Library
The local newspaper is microfilmed semiannually by New England Micrographics. This is excellent and should continue. The smaller of the two vaults houses six cardboard boxes of microfilm reels. (See Figure 7, above) Each box is labeled "Microfilm Negative," and the boxes as a group include reels of the Bicentennial Collection; the *Hingham Mirror*; the *Hingham Patriot*; the *Hingham Mariner*; the *Hingham Journal*; Town Records; and Julian Loring notebooks. It was not known whether these are master or duplicate negatives. As noted in Section III.D.4, the Library also houses a small scrapbook collection. These items are in poor condition, and if their value merits it, they would be excellent candidates for preservation photocopying.

Historical Society
As noted, the smaller of the two vaults in the Public Library houses a box of microfilm negatives labeled "Julian Loring notebooks." Apart from this, none of the Historical Society's materials have been reformatted, but one of the Executive Director's top goals is to have the collections digitized for wider access.

- **Create preservation photocopies of newspaper clippings.** Even under optimal conditions, newsprint has a short useful life relative to other types of paper commonly found in archives. The paper used for these copies should be acid-free, lignin-free, and buffered.

- **Also create preservation photocopies of fragile School Department records.** To prevent further damage, copies of these records should then be used instead of the originals (though the originals should still be retained).

- **Compile an inventory of all microfilmed records, and in doing so, determine and record the location of master negatives.**

- **See that at least two copies exist of each master negative, including a duplicate negative (or "print-master negative") and a use copy.** For more information, see preservation leaflet 6.1, "Microfilm and Microfiche," in PLAM3 or online at www.nedcc.org.

- **To ensure that information is not lost in the event of a building-wide disaster, see that master negatives are stored off-site from duplicate negatives.** Master negatives need to be stored at a maximum temperature of 65°F and a relative humidity (RH) of 35%, ±5%.

- **Film permanent Town records that have not been microfilmed.**

- **The Public Library should assess its scrapbooks to determine, on a case-by-case basis, whether they should be reformatted.** Assessment criteria should include condition, research value, artifactual value, and anticipated level of use. Preservation photocopying would be an excellent option for scrapbooks with solely informational value and in good condition since the copy could be used in lieu of the original, thereby preventing unnecessary handling. Preservation photocopies can be bound for greater ease of use.

- **Before using digitization as a reformatting strategy, Town and organizational leaders should become aware of the financial commitment involved in the long-term maintenance of digital copies.** Digital technology evolves constantly, creating the risk that digital data will be inaccessible in a very short amount of time if it is not managed properly.

- **For information on the fundamental issues involved in establishing a successful digitization project, see "Digitization and Archives" (Canadian Council of Archives, 2002), available as a free PDF online at http://www.cdncouncilarchives.ca/digitization_en.pdf.** A copy of this document is included with the printed version of this report.

- **For information on managing a digitization project, see Maxine K. Sitts, ed., Handbook for Digital Projects: A Handbook for Preservation and Access (Northeast Document Conservation Center, 2002).** This publication is now out of print, but an online version is available at http://www.nedcc.org/oldnedccsite/digital/dman.pdf.

B. Library Binding

Town Clerk
Library binding has been performed on all vital records dating 1928-1988, and on numerous real estate records. It is not known who performed the binding, or whether a contract with the binder exists.

Historical Commission
Library binding has not been performed on Historical Commission records.

School Department
Library binding has been performed on school reports dating 1873-1939. It is not known who performed the binding.

Public Library
Library binding has not been performed for any of the Public Library's historical materials. A number of volumes in Historical I (local history reference) have bindings that are in poor condition. Any of these volumes that are valuable for their information, and not as artifacts, would be good candidates for library binding.

Historical Society
Library binding has not been performed for any of the Historical Society's materials. Given the artifactual value of the collections, this is appropriate.

- **The Library might consider library binding for damaged volumes in Historical I.** Books selected for rebinding should be frequently used, and valuable for their content rather than as artifacts. Only books with flexible paper and sturdy textblocks should be considered for rebinding. In addition, margins should be wide enough that rebinding will not hide information in the gutter.

- **Develop a written contract with the bindery that specifies the Library's preferences for issues such as repairs, leaf attachment and page trimming.** For more information, see preservation leaflet 7.1, "Guidelines for Library Binding," in *PLAM3* or online at www.nedcc.org.

C. In-House Repair & Professional Conservation Treatment

Town Clerk, Historical Commission & School Department
Conservation treatment has not been performed on any of the Town Clerk, Historical Commission, or School Department records. As explained above, the oldest Town records reside in two vaults at the Public Library. Several of the volumes stored in the smaller vault are in poor condition, with detached covers, heavy abrasion, and torn and detached pages. (See Figures 14 and 15, above) These volumes appeared to be 19th century copies of vital records dating as far back as 1635, and Selectmen's records dating as far back as 1661.

Public Library
The Head of Technical Services took a book repair workshop taught by NEDCC, and makes basic repairs to bound volumes in Historical I. Recently, an intern working with conservator Elizabeth Morse "cleaned and restored six manuscripts owned by the library."

Historical Society
Though they were not examined in the course of the site visit, the Historical Society has had some materials from its collections treated by a professional conservator. The Executive Director noted in the pre-survey questionnaire, "When we decide to get an item conserved, we seek out appropriate professionals." Repairs are not performed in-house.

- **In the short term, the oldest Town records volumes should be placed in phase boxes for structural support; in the long term, however, these volumes would be good candidates for professional conservation treatment.** At minimum, minor repairs (e.g., page mending) will almost certainly need to take place prior to digitization in order to achieve good image capture. Given the high artifactual value of these materials, treatment should only be performed by a professional conservator.

- **On the whole, though, treatment of individual items should not be a priority, since the funds required for a single treatment could be used to benefit a larger portion of Town-wide collections.** Each organization should focus time and resources on preventive conservation efforts first, because even if an item is conserved, if it cannot be stored properly, it will only continue to deteriorate.

- **When conservation treatment is performed, ensure that treatment reports are retained.** This will allow staff to refer back and find out exactly what was done to the item(s) if problems arise in future. In addition to keeping copies of treatment reports on file, where appropriate, the Library might consider making a record of conservation treatment in the 583 field of the item's MARC record. For more information, see the Library of Congress' "Preservation and Digitization Actions: Terminology for MARC 21 Field 583," available online at http://www.loc.gov/marc/bibliographic/pda.pdf.

CONCLUSION

Hingham's historical records, which span from 1635, the year of its incorporation, to the present, have the potential to be a rich resource for a wide variety of researchers locally, nationally, and globally. Over the course of the next year or so, the Town will develop a "master plan" to preserve and catalog these materials, with a long-range view of digitizing selected materials to make them more widely accessible. The long-term value of such a project could be enormous if records are selected for digitization strategically, and if the resulting digital resources are managed properly. In that vein, it is important to note that cataloging of materials must precede their digitization. Catalog records will provide the basic descriptive metadata that will make digital surrogates retrievable. Intellectual control of historic documents Town-wide will also support selection for digitization because it will allow decision-makers to identify collection strengths, and to select materials for which digital surrogates will showcase and enhance the intellectual value of the collections as a whole.

As Town and organizational leaders work together to develop the master plan, they should:

- **Be sure to include in the preservation plan a list of high-priority actions that are achievable in the near future.** Small steps—such as straightening rows of leaning books, or raising boxes and framed items off the floor—can have a major impact on preservation.

- **Create a timetable that will allow the plan to be carried out effectively.**

- **Consider the preservation plan a living document to be reviewed and updated annually.** Periodic revision will be needed as circumstances change, and as preservation needs are addressed and new ones are identified.

I hope that this report will help the Town of Hingham to plan effectively for the preservation of its historical records. If this report has raised any questions, or if I can provide any additional information, please do not hesitate to contact me.

Respectfully submitted,

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Appendix: Best Practices for Preservation

I. COLLECTION MANAGEMENT

A. Mission Statement & Collection Policies

A clear mission and a carefully thought out collecting policy are essential to effective preservation efforts. Preservation planning requires a manager to set priorities by looking at the resources available for preservation and weighing the condition, needs, and value of materials against them. This process is sometimes called "selection for preservation." To do this, a repository must have a detailed understanding of its goals and objectives for the collection—exactly what it wishes to document, who it wishes to serve, and what types of material it will collect to accomplish those goals. It is also crucial for a repository to have a clear sense of what it will *not* collect. Collections must be limited to those that serve the real needs and mission of the repository.

The mission statement should enunciate a repository's overall goals (whether for its entire collection or for a part of it, such as special collections or a local history collection), while the collecting policy provides specifics about the scope of the collection and indicates areas in which additional materials may be collected in future. A good collecting policy will take into consideration the holdings and collecting activities of other local (and national, if appropriate) repositories.

Collection management policies spell out the nuts and bolts of caring for historical records: cataloging and processing, procedures for access to and use of the collections, storage methods, target environmental conditions, access procedures, preparation of materials for use, microfilming procedures, environmental monitoring procedures, etc. These procedures are needed for both public and private records. Clear and well-considered policies that are universally enforced will make preventive preservation measures routine and lengthen the useful life of collections.

B. Staffing & Budget

Adequate staffing is crucial to maintaining and preserving library and archival collections. Some preservation projects such as weeding and shelf maintenance do not require an investment in equipment or supplies, but do require a commitment of time. In addition, someone on staff must be assigned the responsibility of being knowledgeable about preservation issues, and of making (or overseeing) preservation decisions. An investment in staff time to carry out collections care and preservation activities will result in a longer life for the records.

Another essential for effective preservation planning is the ability to "liberate" at least a small amount of money for supplies, training and equipment. Effective preservation requires a dependable budget with active administrative coordination, even if the budget is not large at the beginning. A budget line for preservation should be part of the institution's annual budget, to ensure an ongoing commitment to preservation and allow better tracking of expenses.

C. Intellectual Control

Effective selection of collections for preservation requires good intellectual control, since relative values and priorities cannot be assigned unless staff is familiar with the content of collections.

Evaluation of Records

Evaluation and weeding of collections is an essential part of preservation management. Resources (financial and otherwise) are always scarce, and it is important not to waste valuable resources on records that do not have long-term historical value. It is also important to make a distinction between materials that are valuable only for the information they contain and those materials that have intrinsic value and must be retained in their original form.

For public records (e.g., those created by town officials and governed by state records retention/disposition schedules), evaluation is fairly straightforward. Certain types of records are designated as permanent, while others can be disposed of (usually only with the approval of the public records administrator) after a certain amount of time has passed. In some cases the retention/disposition schedules will indicate whether records need to be retained in their original form or whether a microfilm copy is sufficient.

Archival Processing & Descriptive Guides

Cataloging standards for library materials are familiar to most institutions with library collections, but many such institutions are less familiar with standards for the arrangement and description of archival materials. Archival materials (e.g., non-printed items, such as photographs, documents, handwritten ledger books, scrapbooks) are generally organized in groups, since the individual documents are often related. This means that instead of cataloging each individual item, materials that are related are cataloged together, as one unit. The basic purpose of archival description is to enable the researcher to find both the collection he/she needs and the information within the collection by using various types of written guides. This prevents rummaging through large numbers of boxes and documents, which can cause handling damage and general disorder. It also means that the researcher is not solely dependent on the personal knowledge of the archivist or other staff member(s) to access the materials.

Normally an archives will have more than one type of descriptive guide. There might be an overall repository guide that provides brief overviews of each collection, more detailed finding aids for each collection, and finally indexes to enable researchers to access the materials by subject (often collections contain information about other subjects unrelated to the primary subject). Summary catalog records are also prepared, so that they can be shared with other institutions via the standard bibliographic databases. *Arranging and Describing Archives and Manuscripts*, by Frederic M. Miller (Chicago: Society of American Archivists, 1990; available from SAA at www.archivists.org) provides an excellent overview of archival cataloging. For photographs, *Photographs: Archival Care and Management*, by Mary Lynn Ritzenthaler and Diane Vogt-O'Connor (Chicago: Society of American Archivists, 2006; available from SAA at www.archivists.org) provides helpful chapters on arranging and describing photographic collections.

D. Preservation Planning

The most basic requirement for successful preservation planning is local commitment: from the director, from the board of trustees or other administrative entity to whom the director is responsible, and from at least a few key staff members. An effective preservation program requires effort and involves expense—for space, staffing, environmental control, storage supplies and equipment, and/or other strategies. Administration and staff must be willing to find the time and at least some money to undertake preservation activities.

Certainly few repositories have sufficient resources to address all of the preservation needs of all of their collections, however. When resources are limited, choices must be made among preservation activities. Every institution with collections of enduring value should have a preservation plan that weighs the needs of the collections against institutional resources and provides a list of priority preservation actions. Institution-wide long range planning is also essential—to establish the relative priority of the special collections to the rest of the institution's activities.

While this survey should be the first step in putting together a preservation plan, **this report in itself should not be considered a plan**. This report describes preservation needs by category, and it provides an executive summary that assigns these preservation needs a high, medium, or low priority, but it cannot provide a complete analysis of the many factors other than physical condition of collections that must be considered when setting priorities for actual preservation action. Some factors—such as available funding for preservation, staff time and expertise, and user demand for collections—change as institutional circumstances change, and other factors that affect preservation priorities require an in-depth understanding of the institution and its collections that only staff members posses—such as the relative value of collections to the institution and political considerations.

There is general consensus regarding the factors to be considered when prioritizing potential preservation actions:[2]

Collection-specific

1) Use—materials that are used frequently, whether consulted by researchers or exhibited routinely, may be at higher risk than other collections.
2) Storage—collections that are stored under adverse conditions, whether environmental or in damaging enclosures, may require prompt preservation action.
3) Condition—items or collections in fragile condition may be at risk of loss unless they receive attention quickly.

[2] These basic criteria for setting priorities are taken from Sherelyn Ogden, *Preservation Planning: Guidelines for Writing a Long-Range Plan* (Washington, DC: American Association of Museums and Northeast Document Conservation Center, 1997). This publication is geared toward museums but provides general planning information and worksheets for writing a plan that will also be helpful to libraries.

4) Value—either absolute value (rarity, monetary worth, intrinsic or associational value, etc.) and/or relative value of collections to an institution may influence preservation priorities. Whether collections have long- or short-term value to an institution will also influence decision-making.
5) Format—whether or not materials need to be preserved in their original format will also influence priorities.

Overall

1) Impact—those actions that will result in dramatic improvement in current conditions or a slowing of deterioration, or that will affect the greatest number of items, will often be the highest priority.
2) Feasibility—this factor is essential; it includes staffing levels and expertise, financial considerations (outside funding, capital outlay, operating costs, expenses for materials and services), policy and procedural changes required, and political considerations. Even if the impact of a preservation action is high, it may be given a low priority if implementation is not feasible.
3) Urgency—there will always be some activities that require immediate action; collections may be damaged or lost, or an opportunity to act on a particular project may be lost, if action is not taken.

In general, preservation activities that will have high impact (e.g., improved climate control, rehousing of a collection, or microfilming) and are highly feasible (e.g., the staffing, time, and money is available to carry them out in the near future) will be the highest priority. Activities with high impact but low feasibility (e.g., replacing the HVAC system) may be given a lower priority until circumstances make them more feasible, while actions that are feasible but have only minimal impact (such as installing UV sleeves on fluorescent lights) may or may not be undertaken, depending on such factors as cost, visibility within the institution, and collection value. Even if it is only possible to begin with small projects, a written preservation plan will allow the institution to act when the opportunity arises to address more ambitious preservation projects.

II. THE BUILDING & ENVIRONMENT

A. The Building

The most effective way to preserve large quantities of library and archival material is to control temperature, relative humidity, air quality and light; to provide routine housekeeping; and to use good storage and handling techniques. Installation of fire detection and suppression systems is also a high priority. In addition, protection from water damage, theft and vandalism is critical for collections as a whole.

The building is central to all these efforts and must remain in good condition to provide the maximum protection. Regular preventive maintenance should be provided on a fixed calendar basis, with inspection of roof, gutters, skylights, flashings, drains, HVAC equipment, security systems and fire safety equipment. Cleaning and repair should be performed as needed. A log of building maintenance and problems should be kept.

B. Temperature, Relative Humidity & Air Quality

Poor environments reduce the life-span of paper and related materials. For library and archival collections, control of *relative humidity* is crucial. Moisture provides the catalyst for chemical reactions within paper that lead to acid formation. Paper is hygroscopic; that is, it readily absorbs and releases moisture from the surrounding atmosphere, expanding and contracting as it does so. This adds dimensional changes to chemical deterioration and can accelerate deterioration and cause visible damage such as cockling of pages. Excessive moisture also causes mold and foxing, and favors insects. At the other extreme, very low relative humidity (often found in winter in centrally-heated buildings) can desiccate and embrittle some materials. Control of *temperature* is also very important; heat accelerates deterioration by speeding up damaging chemical reactions. The deterioration rate of cellulose appears to double with every temperature increase of about 9°F, independent of other factors.

Stability of the climate is also critical to long-term preservation of collections with special value, such as rare books or local history collections. Research has shown that large and frequent fluctuations—such as those that occur if climate control systems are turned off or if settings are altered when the building is unoccupied—greatly accelerate paper deterioration. Close control of temperature and relative humidity is less critical for general collections in public libraries, since a great percentage of these materials are short-lived. It is more desirable for general circulating research collection, however, since many of these materials are retained over the long term. Every attempt should be made to avoid extremes and large fluctuations in relative humidity and temperature wherever library collections are housed.

There is no national standard for storage of paper collections. The scientific evidence is clear, however: *lower temperatures and lower relative humidities greatly extend the usable life of paper collections*. The National Information Standards Organization (NISO) has issued a technical report entitled *Environmental Guidelines for the Storage of Paper Records*.[3] This publication gives suggested values for temperature and relative humidity for storage of paper records in libraries and archives:

Situation	Temperature	Relative Humidity
Combined stack and user areas	70 °F maximum*	30-50% RH**
Stacks where people are excluded except for access and retrieval	65 °F maximum*	30-50% RH**
Optimum preservation stacks	35-65°F***	30-50% RH**
Maximum daily fluctuation	±2°F	±3% RH

3 William K. Wilson, *Environmental Guidelines for the Storage of Paper Records*. NISO Technical Report (NISO-TR01-1995). Bethesda, MD: NISO Press, 1995. Available from NISO Press, P.O. Box 338, Oxon Hill, MD, 20750-0338; 1-800-282-NISO; <http://www.niso.org>. Another interesting publication is *New Tools for Preservation: Assessing Long-Term Environmental Effects on Library and Archives Collections* (Washington, DC: Commission on Preservation and Access, November 1995), which details the Image Permanence Institute's research into paper preservation. It is available through the Council on Library and Information Resources web site at http://www.clir.org/pubs/reports/reports.html.

Maximum monthly drift	3°F	3%

* These values assume that 70°F is about the minimum comfort temperature for reading and 65°F the minimum for light physical activity. Each institution can make its own choice.
** A specific value of relative humidity within this range should be maintained ±3%, depending on the climatic conditions in the local geographic area, or facility limitations.
*** A specific temperature within this range should be maintained ±2°F. The specific temperature chosen depends on how much an organization is willing to invest in order to achieve a given life expectancy for its records.
- from *Environmental Guidelines for the Storage of Paper Records*, p. 2.

In most buildings in the Northeast, mechanical systems for both humidification and dehumidification (in excess of the dehumidification provided by air conditioning) are required to maintain the specified RH control. Temperature and relative humidity should be systematically documented wherever collections of permanent value are stored. Recorded data will serve to establish existing environmental conditions, support the need for environmental controls (should the need exist), and indicate whether climate control equipment is operating optimally, if such equipment is already in place. Monitoring devices vary greatly in their complexity and effectiveness, so it is important to choose the instrument most appropriate to the situation.

Since temperature and relative humidity are related, correcting one factor may alter the balance of another. It is essential to have the advice of an experienced climate control engineer before making major changes, and monitoring must continue after changes are made. It is most important to provide good routine maintenance for mechanical equipment (including radiators and air registers) as well as regular servicing.

Air Pollution
Dirt and dust particles soil and abrade paper. Gaseous pollutants such as sulfur dioxide and nitrous oxides (SO_2 and NO_x, generated from automobiles and industry), peroxides, and ozone catalyze chemical reactions that lead to acid formation in paper. Exposure of collections to particulate and gaseous pollutants should be controlled to the extent possible.

Routine vacuuming and dusting are the first defense against particulate pollutants. Particulate filtration equipment varies in size and complexity from individual filters attached to vents, furnaces, or air conditioners, to building-wide systems. Particulate matter must be mechanically filtered if centralized HVAC equipment is in use. Filters should match the needs of the equipment and a regular schedule of cleaning or replacing filters should be followed. Exterior windows should be kept closed, and valuable materials should be enclosed in archival enclosures for protection. Control of gaseous pollutants in large areas is expensive and requires a significant investment in equipment and maintenance—here again, the advice of a professional climate control engineer should be sought before major changes are made.

C. Protection from Light

All light accelerates paper deterioration by providing energy to fuel damaging chemical reactions within paper. While the ultraviolet (UV) component of light (present in natural light and artificial fluorescent,

mercury vapor, or metal-halide lamps) is the most damaging, it is important to understand that visible light can also be very damaging. Light causes paper to fade, yellow, or darken, and media to fade or change color. Damage is cumulative and irreversible. Its extent is determined by the intensity of the light and the length of exposure.

Collections of permanent value are best stored in areas with no natural light and low levels of incandescent light. A great deal can be done to control natural light through judicious and careful use of shades, drapes, blinds, or shutters. These also minimize heat loss and heat gain from sun during the day. Skylights should be covered to block the sun.

Levels of UV light must be no higher than 75 microwatts/lumen (this must be measured with a UV meter)—in practical terms this means that most light sources must be filtered to remove UV light. Fluorescent lamps emit significant UV light and require filtering in areas where collections of value are stored. Filters are available in the form of soft, thin plastic sleeves or hard plastic tubes—it is important to insure that these are properly sized so that unfiltered light does not slip by at uncovered ends. Incandescent light does not require UV filtering. UV-filtering film or Plexiglas can be applied to windows and exhibit cases, in order to control the amount of UV to which collections are exposed—but this does not reduce the damage caused by visible light.

See "Protection from Light Damage" in *PLAM3* for additional background information on controlling exposure to light.

D. Protection from Fire

It is a very high priority to equip any repository that houses valuable collections with heat and smoke sensors throughout. To be effective, these must be monitored 24 hours a day through a direct connection to the local fire department or another service provider. Fixed-temperature heat sensors detect smoldering fires inefficiently. Rate-of-rise sensors are better, since they are activated by a sudden, small increase in temperature. Smoke sensors have a relatively high rate of mechanical failure. Both rate-of-rise heat and smoke detectors should be used. All detectors should be tested monthly and maintained regularly as recommended by the manufacturer.

All existing fire hazards should be eliminated and regular fire drills should be held. Repositories should be equipped throughout with portable fire extinguishers and these must be inspected annually. Staff must be trained in their use and they must be inspected annually. Most local fire departments will provide fire inspections and assist institutions in developing a fire safety program. This should include training staff in the use of portable fire extinguishers and in evacuation procedures. If the fire department has been familiarized with the building and collections in advance, there is a greater chance that fire-fighting strategies may be able to take collection priorities into account. The National Fire Protection Agency Publication No. 909: *Standard for the Protection of Cultural Resource Properties—Museums, Libraries, and Places of Worship, 2005 Edition* (available from NFPA at www.nfpa.org) is an extremely useful resource.

The preservation community's recommendations for fire suppression have undergone significant changes in the past 10-15 years. Modern wet-pipe sprinkler systems are now almost universally

recommended for libraries, archives, and museums, due to their relative low cost, ease of maintenance, and dependability. The rate of accidental discharge has been estimated at 1:1,000,000 heads or better. Recent studies indicate that 70% of library fires are extinguished by three or fewer sprinkler heads. These statistics, combined with new, technologically sophisticated methods of drying water-damaged books and paper (i.e. vacuum freeze drying), make sprinklers in libraries and museums less ominous than they once seemed.

For a variety of reasons, the use of Halon gaseous fire suppression systems has been phased out. A number of substitutes are available, including FM-200, FE-13, and Inergen, but these share many of the risks of Halon systems. Such systems require above-average maintenance and are suitable only for protecting the contents of a tightly sealed room that can contain the gas once it is discharged. Any breach to the room will allow the gas to escape and the remaining volume of gas will not be able to extinguish the fire. In addition, there is a limited amount of the gaseous agent, so the fire might burn beyond the capacity of the system. The discharge velocity of the gas is also a concern, as some systems are capable of blowing objects about the room. And finally, many fire codes require the use of water (via fire hose) following a gas discharge, since the agent will not necessarily put out smoldering items. Given a choice, one would prefer the more gentle application of water from a sprinkler to the force and volume of water from a fire hose.

An emerging fire-sprinkler technology that shows great promise is the water mist system. Water mist sprinklers will deliver water at exceptionally high pressures, producing a fine, high-efficiency water vapor. This will maximize water's cooling capacities, thereby extinguishing fires with minimal amounts of water. The sprinklers will be controlled by an air-sampling smoke detection system. This technology is currently being tested but is several years away from practical use.

See “An Introduction to Fire Detection, Alarm, and Automatic Fire Sprinklers” in *PLAM3* for additional information.

E. Protection from Water

The best insurance against water damage is regular inspection of roof covering and flashings, with repair and/or replacement as needed. Gutters and drains must be cleaned frequently. Storage of collections underneath water or steam pipes, lavatories, mechanical air-conditioning equipment, or other sources of water should be avoided. Collections should never be stored on the floor—they must be stored at least 4” above floor level on shelves or pallets. Storage in basements or other areas vulnerable to flooding should be avoided. If storage in such areas is necessary, water-sensing alarms should be installed so that quick detection of flooding is assured. These must be monitored 24 hours a day to be effective; such alarms can normally be connected into the existing fire detection system. Staff should familiarize themselves with the location and operation of water mains and shut-off valves in the event that it is necessary to shut off the water supply during an emergency.

F. Emergency Preparedness

Emergency preparedness—efforts to prevent damage from fire, water, and other hazards—has become routine preservation practice in libraries and archives in the past decade. It is understood that every

institution with collections of enduring value should evaluate its risk of events that could damage holdings. Plausible risks should be addressed and reduced, and the institution should prepare a formal, written plan for responding to emergencies identified as being within the scope of its plan. Fire and security protection—particularly during construction and renovation projects—are essential to preservation, since all other activities to promote preservation of collections become moot if collections are destroyed by fire or lost to theft and vandalism.

Having an up-to-date written disaster plan before a disaster occurs is highly recommended. The plan should include the following:

- **Phone numbers and contact names** for providers of local freezing services, building dry out services and vacuum freeze drying services. For materials that become wet, quick freezing (within 24 hours) prevents mold growth and can keep damage to a minimum. A local supermarket or college food service may be able to provide freezer space, but it is a great advantage to have made arrangements ahead of time.

- **Sources for the purchase of disaster supplies**, such as fans, plastic milk crates, mops, blank newsprint, etc. Note that a source of emergency funds will be needed to purchase such items—how will money be accessed during the night or on a weekend? It is a good idea to keep a few basic supplies on hand, but be sure to note their location so they can be easily found.

- **Identification of staff and volunteers** who will assist in case of a disaster, including home phone numbers.

- **Identification of proper procedures for drying books, documents and photographs.** A training session should be held so that all staff are generally familiar with first response procedures and are not expected to sit down and read detailed instructions as the disaster is happening.

- **Information about insurance coverage.** This should include evening and weekend contact information and specify what procedures the insurance company requires if a disaster happens.

- **Identification of priority items to be rescued in a disaster.** Priority items (both historical records and current administrative records needed for continuing operation) should be identified and their locations marked on a map of the building. If certain areas are normally locked, the location of the keys should be indicated. For security reasons, this section of the plan would be distributed only to a few key staff members. Also note that backups of collection records (e.g., a complete inventory) and administrative records (e.g., backups of computer files, etc.) should be stored offsite in case of disaster. It is also a good idea to keep microfilm copies of land records and vital records in off-site storage.

The information in the "Emergency Management" section of *PLAM3* will be helpful in writing a disaster plan. See especially "Disaster Planning," "Worksheet for Outlining a Disaster Plan" and the leaflets on emergency salvage of various materials.

G. Protection from Theft & Vandalism

Security is essential to the preservation of collections. Access to collections must be controlled during working hours, and the building must be well-secured when it is closed to the public. It is best to install perimeter intrusion alarms and internal motion detectors wired directly to the local police department or to another outside monitoring agency. For the purpose of controlling access during working hours, as well as controlling loss of materials, it is best to limit open entrances, ideally to one used by patrons and staff alike. All other doors should be alarmed to detect unauthorized use. Local fire regulations may require crash bars on emergency exits.

Collections-holding institutions should not use master key systems. Building keys and keys to areas where special collections are kept should be strictly limited. A list of key holders should be kept current, and staff members should be required to return keys when they leave the employ of the institution.

Use of valuable materials by researchers must be carefully controlled and strictly monitored. Theft and vandalism are unfortunately more common than many staff members believe, particularly in small institutions where supervision is limited and staff may give some researchers special privileges. Ideally, researchers should use special collections in a room adjacent to the locked storage area in which those materials are kept. Personal belongings should be left in a locker outside the research room. Researchers should sign a register and be required to fill out a "call slip" for the materials they wish to use—this information should be retained to help identify the last date of use or the last user in case of loss. Ideally researchers should be supervised at all times when they are using collections, but this can be difficult when staffing is limited. One solution to this problem is to require the researcher to leave an identification card (e.g., a library card, if the person is local, or a driver's license if not) with the staff (obviously a secure storage drawer for these items needs to be provided). Staff members would then inspect materials visually before and after use to insure that no theft or vandalism has occurred. The identification card would be returned only when all items have been returned without damage.

Institutions must have some way of demonstrating ownership of unique, artifactual, or otherwise valuable objects. Difficult-to-remove cataloguing or ownership marks on an object itself are often undesirable. Detailed written descriptions and/or photographs of identifying details are essential to the institution's records for such objects.

"Collections Security: Planning and Prevention for Libraries and Archives" in *PLAM3* provides additional information.

H. Pest Management & Housekeeping

Paper and associated materials are appetizing to insects and rodents. Clutter and food remains attract vermin, and food odor is one of the cues to pests that a space may be hospitable. Eating and drinking should be prohibited, especially in collections storage areas. Systematic housekeeping is very important, since dust and dirt also attract pests. Moist conditions may encourage both pests and mold growth, so the climate should be well controlled and water leaks should be avoided. Books and storage boxes should be cleaned at least once a year to prevent soiling and abrasion of paper. Feather dusters only

rearrange dust; dust and dirt should be carefully vacuumed, preferably with a 3-stage filter vacuum to prevent recirculation of dust through the exhaust.

Current preservation practice does not recommend extermination for pest problems except as a last resort, due to the toxic nature of pesticides. Instead, a strategy termed "integrated pest management" is suggested. This involves removing the habitats and sources of food for pests and regularly monitoring the space for the presence of pests. In cases where problems do not respond to preventive techniques, direct treatment for insect infestation may be necessary. Non-chemical means of treatment are preferred. The most promising methods currently being explored are controlled freezing and the use of modified atmospheres.

Staff should perform a general cleaning of books and archival storage boxes at least once a year to prevent soiling and abrasion. Feather dusters should not be used since they just rearrange the dust. Instead, heavy dust and dirt should be carefully vacuumed, preferably with a three-stage-filter vacuum to prevent recirculation of dust through the exhaust.

Books and boxes are best cleaned with a magnetic wiping cloth, which attracts and holds dust with an electrostatic charge. This cloth is sold commercially under the names Dust Bunny and Dust Magnet. If dust is not heavy or sooty, chemically treated dust cloths may be used safely on storage boxes and on books with no artifactual value. Two options are One Wipe, a cloth chemically treated to hold dust and a soft, lint-free dust cloth sprayed with Endust or similar product and allowed to dry overnight. These products are available in local markets.

Books should be held tightly closed during cleaning so that dirt will not migrate into the pages. When cleaning storage boxes and books, staff should work from the top to the bottom of each shelf range. Materials should be removed from each shelf in shelf order to a book cart. The shelf and its contents can then be cleaned and the contents returned to the shelves in shelf order.

Since cleaning has the potential of damaging collections, staff or volunteer assistants assigned this task must be taught careful handling techniques.

III. STORING & HANDLING LIBRARY & ARCHIVAL MATERIALS

A. Storage Furniture & Space

Adequate space is essential for proper collections maintenance and preservation. Overcrowding materials on shelves and stacking materials on the floor exposes them to distortion, damage during removal and reshelving, and damage from water. For any library or archival institution, collections represent a capital investment that must be maintained in the same way that buildings and equipment are maintained. The most basic element of such maintenance is the provision of safe, appropriate storage space.

The choice of shelving materials is important for the preservation of collections of long-term value. Storage furniture can produce by-products that react to form acids and other damaging chemicals in the

presence of moisture and oxygen. This may be a serious problem in closed furniture like map cases, file drawers, locked bookcases, or exhibit cases, where pollutants can build up. Archival materials stored in closed cabinets should always be protectively enclosed.

Wood has traditionally been used in the manufacture of furniture, but it emits numerous reactive chemicals that can damage collections. This can also be a problem with wood composites, sealants, and adhesives. Emissions are highest when the furniture is new, but some off gassing continues for the life of the furniture. If wooden shelving, map cases, or file cabinets must be used, the wood must be sealed—moisture-borne polyurethane or latex or acrylic paint are the best choices, although they will not completely prevent off-gassing of chemicals. Oil-based paints or polyurethanes should not be used since they can be damaging. It is important to line wood shelves and drawers in addition to sealing them. Melinex or 100% ragboard are no longer thought to be sufficient barriers by themselves. Inert metallic laminate (such as Marvelseal, available through conservation suppliers), box board containing zeolites that will absorb damaging chemicals (called MicroChamber, available from Conservation Resources, Inc.), glass, or Plexiglas are among the materials now recommended. Ragboard can be used in addition for cosmetic purposes. For the best protection, all exposed wood surfaces should be completely covered (e.g., sides, tops, and undersides of shelves and drawers).

Standard open metal library shelving with a baked enamel finish has generally been recommended for storing unenclosed books or boxed collections. It is possible, however, that baked enamel coatings may give off formaldehyde and other volatiles harmful to collections if the coating has not been baked long enough at high enough temperatures. This is primarily a concern when collections are stored on bookshelves in an area that is enclosed or has poor air circulation, or are stored in closed furniture such as map cases, file cabinet drawers, and book cases with solid doors. The only way to be sure that baked enamel furniture is not harmful is to have it tested.

Alternatives that appear to avoid the problems of baked enamel are powder-coated or anodized aluminum furniture, but be aware that these are somewhat more expensive. Open chrome-plated steel shelving, made of heavy-gauge, chrome-plated steel wire, can also be used, but only for boxed materials. The wires can leave permanent marks on items that are not protected with boxes.

See “Storage Furniture: A Brief Review of Current Options” in *PLAM3* for more information.

B. Handling Practices

Damage to collections through carelessness is perhaps more common than theft or vandalism, but it often goes unrecognized. It is essential to educate staff and users in the proper ways to handle collections. Careless handling—whether during shelving, retrieval, photocopying or researcher use—can cause significant damage to collections over the long-term.

Handling procedures can also cause unnecessary damage to books. Books should not be pulled off the shelves by the headcap, a practice that can cause the headcap to fail and tear the spine. Instead, books on either side of the desired book should be pushed in and the desired book gripped gently on either side of the spine. Books should not be stacked too high when they are moved or carried, to minimize

the chance of dropping them. Photocopying can damage book spines and should be done on an edge copier whenever possible.

Documents should be handled carefully to avoid tearing, folding or accidentally marking them. Researchers and staff must not be allowed to use pens, tape, glue or scissors near historical materials. They should not take notes on top of collection materials, as the pressure can emboss the paper. Staff should always photocopy fragile documents.

There has been considerable debate about the use of cotton gloves when handling paper. In most cases, the loss of dexterity is more damaging to paper than are oils from the skin, so gloves should not be used. However, staff and researchers should wash their hands immediately before handling collections. They should not apply moisturizing lotions before handling materials.

In contrast, dirt and oils from fingers are disastrous to the emulsions of photographic materials, so cotton gloves should always be worn. Wherever possible, Xerox copies or copy prints should be used for general research purposes to reduce handling of originals.

Sufficient workspace is essential to proper handling. Aisles and work surfaces where oversize materials are used must be large enough to allow them to be handled without damage. A work surface large enough to support items should be close to the storage area.

All staff members who work with historical collections should learn proper handling procedures. For more information, see "Storage Methods and Handling Practices" in the "Storage and Handling" section of *PLAM3*.

Staff must explain proper handling techniques to researchers on their first visit and as needed throughout their research. Often, proper procedures are described in writing on the registration form, which all researchers must sign before using historic collections. This helps emphasize researchers' individual responsibility for handling materials carefully.

C. Storing Bound Materials

1. Books

Shelving practices often cause unnecessary damage to books. For example, when oversize books are shelved with the spine up, the weight of the pages will pull the text block away from the cover. Such books should always be shelved spine down or stacked horizontally. Books should not be allowed to lean because this too causes unnecessary strain on covers and binding. They should instead be shelved upright, standing on their tails, supported by each other and by bookends. However, books should not be shelved so tightly that retrieval requires force. This causes abrasion of covers as the books are removed and reshelved.

Broad-edged ("non-knifing") bookends are safer than the flat ("knifing") variety, whose sharp edges may damage books. Staff can modify knifing bookends by slipping a piece of acid-free foam-core covered

with bookcloth over the sharp metal edge. A brick covered with bookcloth fastened with PVA adhesive also makes a good book support.

Heavy, oversize volumes should not be shelved vertically. Instead, they should be stored flat on shelves, giving them the overall support they require. They should be stacked no more than two or three high in order to facilitate safe handling. This may necessitate inserting additional shelves at narrow intervals. Shelves must be wide enough to support oversize volumes completely and books must not be allowed to protrude into aisles where they will likely be bumped.

Care should be taken to remove all acidic inserts like bookmarks, scraps of paper, etc., from books so that the acid they contain does not migrate to the book pages and cause staining.

Books of enduring value should be shelved by size. Very small volumes will not support large bindings and can be crushed by the weight of larger books. Small hard-covered volumes may be shelved. Soft-covered volumes should be laid flat in piles or boxed together by size.

Identifying information should not be painted on books that have special value, nor should it be typed on labels that are taped to the volumes with pressure sensitive tape. Paint is unattractive and disfiguring; tape may discolor and stain the binding. Instead, information should be typed onto heavy, buffered paper flags placed inside the volume. The flags should be about two inches wide and two to three inches longer than the book is high. Commercially available "notched" flags have a tendency to break brittle paper.

Damaged bindings should not be held together with rubber bands, which will deteriorate and cause further damage. If detached covers must be tied onto books as temporary protection, ties should be made of undyed cotton or linen tape or undyed polyester ribbon. Any knots should be at the top or fore edge of the text block to prevent damage from pressure against other books.

Volumes with artifactual value, where the fragile binding is to be retained in its present condition, should be boxed. Fitted boxes support a volume and protect it from dirt, dust, light and mechanical damage. They may also slow a book's response to climate changes. Permanent or decorative boxes (clam-shell or drop-spine) can be custom-made for books of very special value by conservation facilities. A simpler, less expensive option is called a "phase box" (so-named because enclosure in these boxes is the first phase of treatment for volumes at the Library of Congress).

Volumes that have low value or are rarely used and do not warrant binding repair may also be candidates for boxing. "Easy rare book boxes" (which are really wrappers made of pre-scored, acid-free cardstock) are available from conservation suppliers. They are a good choice for such volumes.

2. Pamphlets & Booklets

Pamphlets and small booklets can be stored in specially made enclosures, in folders and boxes, or in hanging folders in file cabinets. Pamphlets of the same cover size can be stored in drop-spine or phase boxes. Pamphlets that differ in size may be stored according to guidelines given for manuscripts and

documents. Pamphlets more than about 1/4" thick should be stored spine down in individual folders. Pamphlets of very different size should not be stored in the same folder.

If individual pamphlets must be shelved between books, they should be individually boxed. Groups of pamphlets shelved between books can be boxed together if the guidelines above are followed. If pamphlet binders are used, they must be of preservation quality throughout. They should never be glued directly to pamphlets. Where stitching is used to join pamphlet and binder, it should be done through the fold or in original fastener holes where possible.

D. Storing Unbound Materials

Low-lignin buffered file folders, boxes, and other storage materials should be used for all collections of permanent value. Archival-quality storage materials are available from most conservation suppliers (see "Preservation Suppliers and Services," on NEDCC's Web site at www.nedcc.org.

When processing archival collections keep in mind that acid will migrate from poor-quality paper to any other papers with which it comes in direct contact. It is very important to separate poor-quality papers from those that have a high rag content. News clippings and other obviously inferior papers must be removed from direct contact with historical documents and manuscripts. Informational news clippings can be photocopied onto buffered paper.

Be careful to store objects of the same size and category together. Archivists habitually organize collections by subject group, but objects of differing bulk and weight can cause damage due to uneven pressures in a drawer or box. It is not advisable to store single sheets in the same box with books or pamphlets unless separate enclosures and supports are provided for each category of material. Generally speaking, heavy or bulky objects should be stored separately from lighter objects.

1. Documents & Manuscripts

Documents and manuscripts should be unfolded for storage if they can be unfolded without resistance, splitting or breaking. If unfolding threatens the integrity of the paper, a conservator should be contacted. All foreign objects such as staples, paper clips and pins should be carefully removed since fasteners produce physical damage.

Documents should be stored in low-lignin, buffered file folders, each containing no more than fifteen sheets. The folders should then be placed in document storage boxes, as close to the size of the folders as possible. All folders in a single box should be the same size. Boxes should be full enough to prevent slumping of the contents. Boxes should not be stuffed too full, since this can cause damage when folders are removed or refiled. Partially empty boxes can be filled with document spacers available from conservation suppliers. Crumpled acid-free tissue paper can also be used to fill excess space, although tissue is likely to compress over time and allow materials to sag.

An alternative to boxed storage is a baked enamel file cabinet equipped with hanging racks and hanging folders. Materials should always be placed inside an acid-free file folder, then into a hanging file. Several file folders may be placed into each hanging file, provided that they do not extend above the top

of the drawer. Archival-quality hanging folders are available from some general conservation suppliers, but conventional "Pendaflex" folders are acceptable if materials are protected from direct contact by acid-free folders.

2. Oversize Materials

Prints, maps, broadsides, and other oversized objects are best stored flat in map drawers or in large covered boxes of preservation quality (available from conservation suppliers). It is acceptable to store documents legal-sized or smaller in upright archival boxes, but anything larger than 15" x 9" should be stored flat. Sheets smaller than 30" x 40" will fit into archival boxes, which come in various sizes and are cheaper than map cases. Objects should be protected in neutral or buffered folders cut to fit the size of the drawer or box—since smaller folders tend to shift position as the drawers open and close, and get jammed at the back of the drawers. Several objects may be placed in a folder. Items of special value should be interleaved with buffered or neutral tissue paper. Blueprints, cyanotypes, and hand-colored objects should not be stored in alkaline buffered folders because some pigments may react and change color. Lignin-free, neutral folders should be used for these materials.

If map drawers or boxes are not available, or if objects are too large to fit in map drawers, oversize objects can be rolled on tubes or within a polyester folder. "Storage Solutions for Oversized Paper Artifacts" in *PLAM3* provides detailed instructions for doing this safely. Always make sure the paper is not too brittle to withstand unrolling.

Any prints, drawings or other objects that have been matted or backed with acidic materials or wood should be removed from those mounts. They may be reframed in their original frames using museum-quality materials. These objects may also be safely stored unframed, matted or unmatted, in folders inside boxes or drawers, as described above. Frames should not use eye screws or other protruding hardware for hanging. They can cause damage to other frames or glazing. These should be replaced with D-rings on brackets, available from framers. See "Matting and Framing for Art and Artifacts on Paper" and "How to Do Your Own Matting and Hinging," both in *PLAM3* for more information.

3. Newsprint

Newsprint produced after 1840 usually contains ground wood and may be highly acidic. Long-term preservation of this paper is difficult at best. It is *possible* to treat newsprint by deacidification and reinforcement, but this is generally not considered practical for large quantities of material; in addition, deacidification will not make yellow, brittle paper white and flexible again.

Most news clippings are important because of the information they contain, not because they have artifactual value. For this reason, either preservation photocopying or microfilming are considered to be the most practical options for collections of news clippings. All photocopying should be done on low-lignin, buffered paper using an electrostatic photocopier with heat-fused images. Originals may be deaccessioned after photocopying at the discretion of the curator. News clippings with photographs that do not photocopy well may be retained. News clippings that are to be retained in their original form should be deacidified and stored separately in a folder or in a polyester enclosure.

4. Photographic Materials

Photographic prints and negatives should be stored separately and in individual enclosures. Enclosures provide physical support and protection; they can be made of paper or plastic. Paper enclosures require photos to be removed for examination; plastic enclosures allow a researcher to view the image without handling, reducing the danger of scratching or abrasion. Polyester (e.g. Melinex), polypropylene, and polyethylene are currently the only plastics acceptable for photo storage. Uncoated transparent polyester is the material of choice, but it is also the most expensive. Where possible, items of similar size should be stored together; the mixing of different sizes can cause abrasion and breakage, and can increase the risk of misplacing smaller items. Horizontal storage of photographs is usually preferable to vertical storage, since it provides overall support and avoids mechanical damage such as bending. See "Storage Enclosures for Photographic Materials" in *PLAM3* for additional information.

Nitrate and acetate film negatives can pose preservation problems. As it deteriorates, nitrate film generates oxidative gases that will damage photographic and paper collections in the surrounding area. Nitrate film also poses a serious fire hazard, although the hazard is less for sheet film than it is for roll film such as motion pictures. "Safety" film (cellulose acetate) generates acetic acid as it deteriorates. This acid is not an oxidizing agent and therefore does not pose a threat to surrounding collections, but it will cause paper enclosures to become acidic and brittle over time.

Both nitrate and acetate negatives should be monitored on a regular basis and ultimately duplicated onto a stable polyester film base. Both nitrate and acetate negatives should be stored in buffered paper envelopes, and nitrate negatives should be stored separate from other collections in a well-ventilated area. Nitrate and acetate safety films deteriorate at about the same rate, so institutions should give the highest priority for duplication to that film which shows early signs of deterioration, since deterioration can proceed very quickly once it begins.

Glass plate negatives should be stored in boxes made for this purpose by conservation suppliers. Individual glass negatives should be enclosed in paper enclosures like those described above and placed inside boxes designed to stand upright on the shelf. Glass plate negatives should not be stacked flat on top of each other, since the weight of large glass negatives can damage those on the bottom.

Color photographs and negatives, color slides, and color motion picture films are increasingly found in library and archival collections. Color materials are inherently unstable. Most of the dyes used in color emulsions fade quickly when exhibited (in a few years or less), and most fade or discolor even when stored in the dark (in many cases this occurs in less than 35 years). The authoritative work on preservation of color materials, comprising nearly 750 pages, is *The Permanence and Care of Color Photographs: Traditional and Digital Color Prints, Negatives, Slides, and Motion Pictures* (by Henry Wilhelm, with Carol Brower; Grinnell, IA: Preservation Publishing Co., 1993).

5. Scrapbooks & Ephemera

Many historical collections include scrapbooks and ephemera (e.g., tradecards, valentines, patterns, paper dolls, etc.). These objects pose challenging preservation problems, because they often contain a variety of components and media. They may have raised surfaces or three-dimensional decoration.

They are frequently unique, fragile, damaged, or of significant associational value. They should never be interfiled with other categories of library and archives material, because significant chemical and mechanical damage can result from the different sizes, shapes, weights, adhesives, and media represented.

Most scrapbooks and ephemera can be handled according to general guidelines for other, parallel categories of artifact. Objects that have informational value alone (for instance, some clippings scrapbooks) can be photocopied onto archival-quality paper and boxed, bound, or foldered. The originals can be retired from use, and copies made available to researchers. Scrapbooks that have enduring value in their original form should be individually boxed in custom-fitted boxes. Valuable scrapbooks may have a high priority for evaluation by a conservator.

Other artifacts should be grouped by size and composition (e.g., photographs, printed material, documents, etc.), enclosed to protect them from chemical migration and mechanical damage, and stored in a way that will support the structure of the artifact (encapsulated, boxed, stored flat or in hanging files, etc.). Some vendors of archival supplies offer custom-sized storage boxes and sleeves for common ephemera such as postcards and stereo views. Others can produce custom-sized boxes in quantity to meet special needs. For more information on preserving scrapbooks, see "Preservation of Scrapbooks and Albums" on the Library of Congress web site at http://lcweb.loc.gov/preserv/care/scrapbk.html.

6. Magnetic & Optical Media

Research collections frequently include recorded sound, videotape, computer records, and other non-traditional materials. Unfortunately, none of these is "archival" -- that is, capable of surviving with minimal deterioration for long periods of time.

Videotapes and audiotapes (along with computer tapes and some computer disks) are magnetic media, and as such they have a considerably shorter life expectancy than do paper-based materials. The best predictions for their life expectancy extend only twenty to thirty years. The estimated life expectancy of magnetic media that are in use is only about ten years. The binders used to couple magnetic media to their film base break down quickly. Damage from playback equipment and the susceptibility of magnetic media to migration and abrasion add to the difficulty of preserving video and recorded sound. Stringent handling procedures are essential.

There is little consensus on the ideal climate for preservation of magnetic media, but desirable conditions would be within the range given for paper-based materials. Cold storage can significantly increase the life expectancy of magnetic media. Videotapes should be stored in an area with the coolest possible temperatures and the most tightly controlled conditions. As with paper, fluctuations in climate should be avoided as much as possible.

For audiotape and videotape that is deteriorating rapidly and/or becoming obsolete, create a preservation master, which will then be used to produce use copies for viewing and listening. Playback causes considerable wear and tear, so the originals should be played as little as possible. All playback

machinery should be kept clean and in good condition, to minimize damage to the tapes from playback (some damage is inevitable).

The preservation master should be stored in a stable and moderate environment (in cold storage if possible) and restricted from use. Preservation masters and service copies can be made either in digital or analog format, each of which has advantages and disadvantages.

It is generally recommended that sound recordings be reformatted via analog recording onto quarter-inch polyester standard-play tape with a ferric oxide coating. The preservation master should reproduce the original as accurately as possible, while the service copy can be altered to improve the sound quality if desired. Videotape can be copied onto VHS videotape, or the first copy can be created on better-quality tape, which can then be used as a master to make additional copies as needed. BetaCam SP (a half-inch analog tape) has often been used for this purpose, although DigiBeta (a half-inch digital tape) can also be used.

E. Exhibition

The need to exhibit books and paper artifacts complicates the goal of preservation. The display environment is often more difficult to control than the storage environment; the materials displayed have, almost by definition, special value; and preservation is often secondary to an exhibit designer. At the very least, exhibited objects are exposed to higher light levels than they would normally experience in storage.

Valuable paper collections should never be exhibited permanently, since this can cause irreversible fading and accelerate acidic deterioration. Whenever possible, duplicates or facsimiles of photographs and other paper-based materials should be exhibited. If originals must be exhibited, light levels should be no higher than 50 lux and exhibit length should be limited to 2-3 months. Climate conditions inside exhibit cases should be monitored to insure that they are not damaging. A min/max thermohygrometer will give a general indication of conditions.

Duplicate photographs can usually be made, and extremely good facsimiles can now be produced at a reasonable cost. Canon is marketing a computer-modulated four-color (plus black) photocopier that makes exceptional reproductions on alkaline paper. Other manufacturers have also entered this field. Such copiers are prohibitively expensive for most institutions, but the service is increasingly available commercially. We recommend exhibiting duplicates or facsimiles whenever possible, or perhaps alternating original and facsimile objects in long-term exhibits.

Exhibit cases should be built of stable, pollutant-free materials and coatings; mounts, supports, and other exhibit materials should be made from inert materials like Plexiglas and polyester, or from neutral paper. Exhibit cases should not contain lights, since these cause significant changes in temperature and relative humidity within the case. Fiber-optic lighting is acceptable, since it does not produce heat.

Documents should be completely supported by mats and museum-quality framing and hinging techniques, or by polyester slings, bands, or coversheets. See "Matting and Framing for Art and Artifacts on Paper" and "How to Do Your Own Matting and Hinging" in *PLAM3* for instructions for matting,

hinging, and framing. Additional sources are Ann Clapp's *Curatorial Care of Works of Art on Paper* (New York: Nick Lyons, 1987), and Margaret Holben Ellis's *The Care of Prints and Drawings* (Nashville: American Association for State and Local History, 1987).

Books must be well supported to protect their bindings from strain. Supports can be made from neutral mat board or Plexiglas. A stand or mount should support the entire cover(s) of a book as well as the spine. Reasonably good Plexiglas supports are available from conservation suppliers. Most books, and all oversized books, should be exhibited at no more than a gentle angle. If the book will not remain open naturally, a polyester band closed with 3M double-sided tape no. 415 can be used to hold the book open. Books can be structurally damaged by long-term exhibition in an open position; exhibit periods must be limited.

A standard for exhibition of paper-based collections has recently been issued; ANSI/NISO Z39.79—2001 *Environmental Conditions for Exhibiting Library and Archival Materials* provides guidelines for light; temperature; relative humidity; pollutants; exhibit case materials, design, and construction; methods used to display items; and appendices that provide lists of materials that are recommended and not recommended for use in constructing exhibit cases or supports for exhibiting particular items. A free PDF version of the standard can be downloaded from NISO's web site, at www.niso.org.

IV. REFORMATTING & CONSERVATION TREATMENT

A. Microfilming, Preservation Photocopying & Digitization

Reformatting strategies like photocopying or microfilming should be considered when the value and condition of collections materials make it necessary to limit their handling or when only intellectual content needs to be preserved. In the case of original photographs, unique or valuable materials or fragile items, a copy is preferable for researchers' use, at least for initial examination.

Microfilming

Despite increasing interest in new technologies, preservation microfilming remains an established and valued preservation strategy. Properly produced and properly stored preservation microfilm has a lifespan of about 500 years. Filming can provide a use copy for artifacts that are too fragile to be used and can provide a preservation copy for materials that are badly deteriorated and valuable only for their informational content. In most cases, preservation microfilming is contracted out. High-volume commercial operations usually lack equipment, time and expertise to process fragile materials without damage. A special service filmer should be employed.

See "Microfilm and Microfiche" in *PLAM3* for an overview of film types, film production standards and storage requirements.

Preservation Photocopying

In-house photocopying onto permanent durable paper is an excellent way to preserve information from acidic paper materials such as news clippings. Electrostatic copiers that fix an image with heat ("Xerograph") produce long-lived copies when durable paper is used. Paper used for preservation

photocopying should meet the ANSI Z39.48 1984 or 1992 standards for paper permanence. Such paper is available from preservation suppliers and some traditional office supply sources. The label will say "low-lignin" or "lignin-free" and "buffered." The Library of Congress has a handout available on the Web that gives more detail on preservation photocopying (see "Preservation Photocopying," Library of Congress Preservation Directorate, available at http://www.loc.gov/preserv/care/photocpy.html).

For used frequently local history books that are damaged, brittle and out-of-print, preservation photocopying—also called facsimile reproduction—can provide a use copy. It is not the best choice for a book that is valuable as an artifact, since the photocopying process can be damaging, but it is a good option for books that are only valuable for their content. A number of facilities specialize in facsimile reproduction of brittle books on buffered paper. Some of them are listed in "Resources for Facsimile Replacement of Out-of-Print and Brittle Books" in *PLAM3*.

Unfortunately, the photocopying process itself can seriously damage collections. Copiers with flat or curved platens may not readily copy text at the gutter of a tightly bound book. Materials of enduring value should never go through a roller feed. Careful handling during the photocopy process is essential. Historical materials and volumes with permanent research value should only be photocopied by staff members, not researchers and then only if it will not damage the objects themselves. Staff must not press down on the spine of a book or the cover of the copier to insure a good quality image. Sometimes positioning a book gutter perpendicular to the edge of the platen will reduce the shadow. Edge copiers protect the spine by allowing book to be copied without being entirely opened.

Digitization

Administrators and staff must be aware that the large segments of the preservation community do not yet consider digitization to be a means of preservation. Those conservation and preservation professionals who do accept digitization for preservation have begun to do so only recently, and have not yet agreed on the best strategy to preserve digital materials. More conservative members of the conservation and preservation communities still recommend that digitization be partnered with microfilming to ensure long-term preservation of the information.

Among those who do believe digitization may be used for of preservation, consensus is developing around several likely strategies. A good place to start—particularly for digital images—is Cornell University's online tutorial, "Moving Theory Into Practice," at http://www.library.cornell.edu/preservation/tutorial/contents.html. Any digital preservation strategies will require a significant on-going commitment of time and resources, which may be beyond the means of smaller institutions acting independently; it is likely that consortia and other cooperative efforts will be required.

Leaving aside the question of digitization as a direct means of preservation, digitization can definitely improve preservation indirectly, by reducing handling. It can also be an effective means of increasing access, particularly for off-site users.

B. Library Binding

In recent years numerous discussions of binding considerations for research materials have appeared in the library literature. Any institution that uses commercial library binding for preservation purposes should be familiar with the options that have replaced oversewing or "Class A" binding and should make decisions for its own collections based on those options. Contracts with library binders should specify standards, procedures and guidelines covering the range of materials in a library's binding program. Books returned by the binder should be individually inspected for quality of work and adherence to these specifications. Volumes with value as artifacts should never be rebound using library binding techniques or materials. Paper must be strong enough to withstand library rebinding without additional treatment.

Oversewn or side-sewn volumes can be difficult to open and it can be difficult to photocopy or read information near the inner margin. Ideally, these guidelines would produce the most useful and long-lived bindings: 1) any sewn volumes that are suitable for recasing should be recased; 2) volumes with intact signatures should be sewn through the fold; and 3) volumes without intact signatures and with a text block two inches thick or less should be double-fan adhesive bound.

Formal standards have been adopted by the binding industry for commercial high volume or library binding; these are detailed in the 8th edition of The Library Binding Institute *Standard for Library Binding* (1986, Paul Parisi and Jan Merrill-Oldham, The Library Binding Institute, 8013 Centre Park Drive, Austin, Texas 78754). The Guide to the Library Binding Institute Standard for Library Binding (1990, Paul Parisi and Jan Merrill-Oldham, American Library Association, Chicago, IL) provides clarification and explanation of recommendations given in the LBI Standard.

C. In-House Repair & Professional Conservation Treatment

Circulating Collections

Some techniques can be safely carried out by people who are not conservation professionals. Techniques used without the supervision of a conservator should be limited to objects that do not have special value to the collections.

Basic book repair, proper shelving practices and correct handling procedures can significantly extend the useful life of circulating materials. Preventive activities such as avoiding fore edge shelving, limiting use of book drops, and handling books carefully during interlibrary loan can help prevent distortion, which often causes the text block to detach from its binding. Proper shelving and handling procedures have been discussed in the section on handling books (above).

It is important to remember that for most libraries, very basic repairs such as tightening the hinges of a hardback book, repairing dust jackets and repairing torn pages will be the most useful and cost-effective. These kinds of repairs combined with careful handling procedures will lessen the amount of major damage to bindings and text blocks. More extensive repairs such as rebacking a damaged spine or recasing a text block that has fallen out of its cover require more complex training and supplies and may not be appropriate. In many cases weeding or replacement of damaged volumes will be a better choice.

Staff should be trained in proper book repair procedures. Supplies and materials used should be relatively non-damaging, and the resulting repairs should be strong and should allow the book to function well and remain attractive to users. Written instructions are available for basic repairs, but hands-on training is essential to insure that repairs are performed correctly. Workshops in basic book repair are offered by NELINET, NEDCC and other area organizations. A private consultant could also be engaged, perhaps as a cooperative effort among several libraries, to teach proper book repair techniques to library staff. NEDCC can provide references to such consultants. After initial training has been completed and a book repair program has been initiated, it is a good idea to have a periodic review of the program and procedures by a preservation professional experienced in repair of general collections.

The value of preventive care has been confirmed by the experience of the Wellesley Free Public Library in Wellesley, MA. An initial 1987 collection condition survey at Wellesley found a significant amount of collections damage. An aggressive program of preventive maintenance was initiated that included performing minor repairs, training staff to identify damage early and eliminating shelving and circulation practices that cause distortion. A second survey was conducted in 1991 at Wellesley and at three other Massachusetts libraries; its goal was to update Wellesley's condition findings, evaluate the effectiveness of their preservation efforts and provide statistically valid results to help define the condition of books in Massachusetts public libraries of various sizes and types. The second survey found an obvious improvement in the condition of Wellesley's collections and provided condition surveys for the Framingham, Concord, and Medfield public libraries, whose findings can be extrapolated to other libraries in the state. The following article was published about these condition surveys. "Preservation: The Public Library Response," *Library Journal* (February 15, 1989), 128-132. Co-authors: Anne Reynolds, Nancy Schrock and Joanna Walsh.

Historical Collections

Book repair procedures for general collections should never be used on historical materials with artifactual or permanent research value. However, some appropriate techniques can be used safely by non-conservators with proper training.

In the context of historical collections, "safe" in-house techniques include rehousing; simple cleaning of books and some paper; simple repairs of book pages or documents and polyester film encapsulation of documentary materials. Paper that has artifactual or permanent research value should only be mended using conservation-approved methods and materials. Pressure-sensitive tapes and many other adhesives have proven unstable over the long-term and many will cause permanent damage.

Other treatments must be performed by professional conservators who have the experience and equipment to ensure that the treatments are performed safely and effectively. If you are unsure whether an object is appropriate for in-house treatment, consult a conservator before proceeding.